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Techno-Economic Survey of

Himachal Pradesh

National Council of Applied Economic Research
New Delhi

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Preface

WHEN THE NATIONAL COUNCIL WAS IN THE MIDST OF A MASSIVE TECHNO-ECONOMIC SURVEY operation covering almost all the States in India, the Ministry of Home Affairs, Government of India, expressed interest in a similar survey for each of the three centrally administered States, namely, Himachal Pradesh, Manipur and Tripura and discussed the feasibility of conducting a Techno-Economic Survey of these States. Later, late Pandit Pant, in a meeting with me indicating the nature and scope of the survey stated that it should be highly practical to enable the Government to take appropriate action. This Report is the result of that meeting. The Reports on Manipur and Tripura have since been published.

The three Centrally administered States are of a pattern. They are all frontier territories, predominantly rural, with a large tribal population, highly inaccessible, historically neglected and undeveloped and heavily dependent on Central revenues for day-to-day administration. Even so, each Territory is somewhat at a different stage of development and the strategy required for further growth varies.

After an elaborate assessment of the resources, natural and human, available in the Himachal Pradesh Territory, the Council came to the conclusion that the key to the development of the resources of the State lay in building up a network of roads and communications, so as to make this State accessible to the rest of India. Equally important perhaps, is the need to build up the instruments of economic growth, such as, cooperation, panchayat and to improve human resources through education and public health measures. It is only after these have been attended to, that the development of agriculture, fisheries, forests and industries could have any meaning and purpose. All this would require an outlay of about Rs. 90 crores in the next 10 years, of which about Rs. 40 crores will have to be in the Third Plan and Rs. 50 crores in the Fourth Plan.

Even with an investment of this magnitude, no miracles can be expected. We shall have only built the essential infra-structure which alone can make growth possible and without which the beginnings of progress cannot be made. The rate of growth that would result from this investment will not be anything compared to that which will obtain in others States or with that contemplated for all-India. But it will prepare the ground for the next stage to development. All this may not be a very exhilerating conclusion, but it seems inescapable. It is inherent in the very resources picture of the Territory.

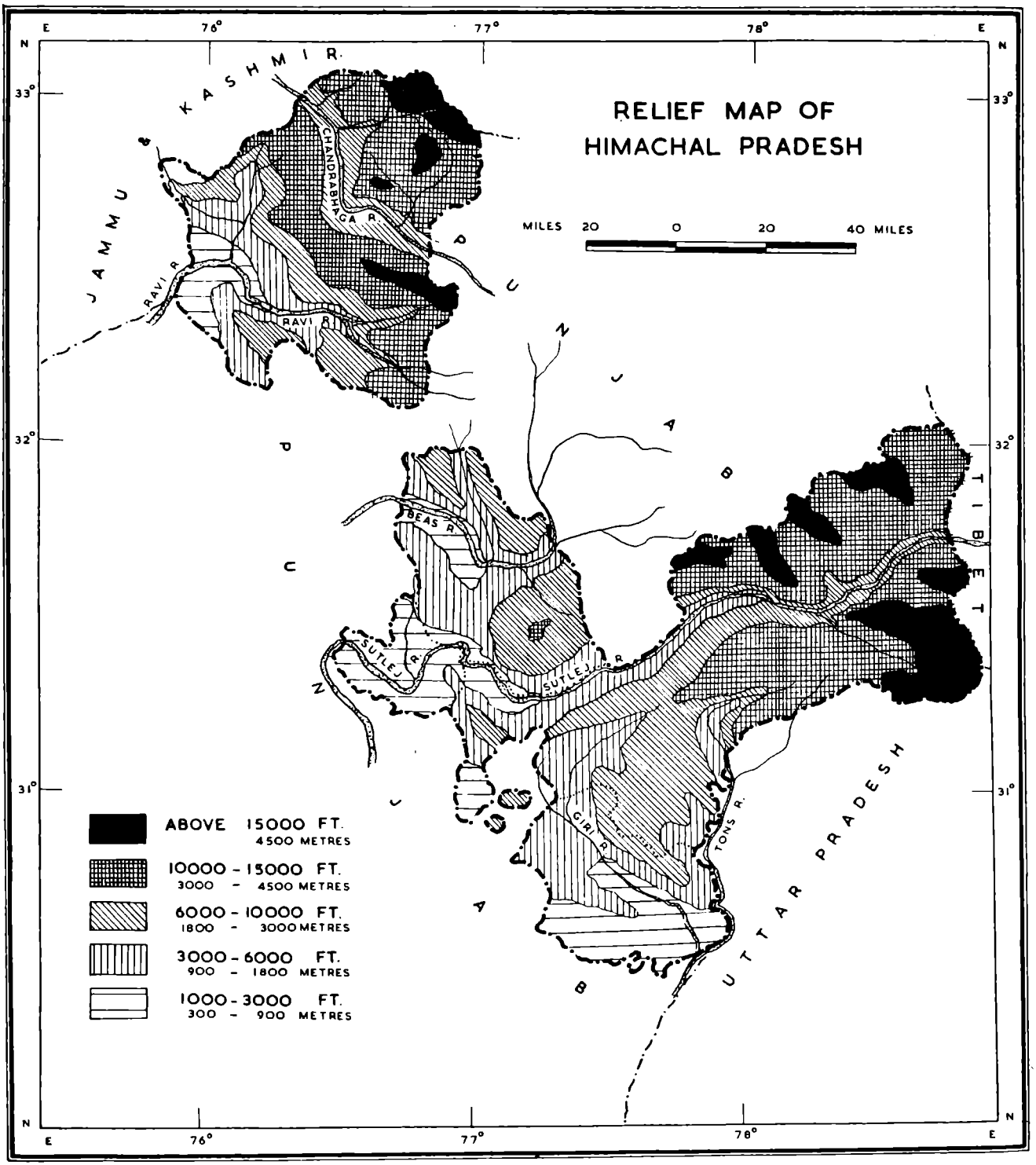
It is not, as if no development in the sphere of agriculture and industry would take place at all. Agricultural production would increase by facilitating a shift in the cropping pattern in favour of horticultural and cash crops. An adequate afforestation programme coupled with improved extraction techniques will strengthen the forest base of Himachal Pradesh. A few engineering industries and a soda ash plant have been recommended by the Council. But the scope for the development of large scale industries is limited in the coming decade. But by and large, the

emphasis will have to be on the building of economic and social overheads. The strategy of development that is required in the next 10 years has been worked out in detail in the Chapter on ' Pattern of Development '.

The Survey was conducted by a Team of Economists and Technical Experts led by Dr. M. H. Gopal and later by Dr. B. Natarajan under my guidance and supervision.

NEW DELHI
September 1961

P. S. LOKANATHAN
Director-General


RELIEF MAP OF
HIMACHAL PRADESH
MILES 20 0 20 40 MILES
JAMMU & KASHMIR
CHANDRABHAGA R.
RAVI R.
RAVI R.
BEAS R.
SUTLEJ R.
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TONS R.
TIBET
UTTAR PRADESH
INDIA
ABOVE 15000 FT.
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76°
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Chapter 1

The Setting

Physical Features

1.1 Himachal Pradesh lies in the Himalayan region of India. This Union Territory was formed in 1948 by bringing together 31 petty Princely States at different levels of administrative efficiency and economic development. The Territory is bordered by Jammu and Kashmir in the north, by Punjab in the north and west, by Uttar Pradesh and Punjab in the south, and by Tibet and Uttar Pradesh in the east.

1.2 The Territory is situated between 30.3°N and 33.3°N and 75.8°E and 79°E in altitudes ranging from 1,500 feet to 22,000 feet above the mean sea level. Out of an area of 11,524 square miles,[1] 198 miles in length and 186 miles in breadth, a little more than a third is at an altitude of 10,000 feet and above. This reduces considerably the resources potential such as the land area available for utilization, adding at the same time to the problems of economic development arising from different altitudinal regions.

Three Zones

1.3 The Territory can be divided into three zones — Outer Himalayan, Inner Himalayan and Alpine pasture. The rainfall in the first zone varies from 60 to 70 inches and in the second from 30 to 40 inches. The Alpine zone remains under snow for about five to six months in the year and this compels the inhabitants to become migratory. The average rainfall is 63·45 inches. The climate varies from cool to cold with areas under snow during winter. Five big rivers flow through the State — the Beas in Mandi, the Sutlej in Mahasu and Bilaspur, and the Ravi in Chamba, the Jammu with its source in Mahasu and along the borders of Sirmur, and finally, the Chenab flowing through Chamba. All these rivers are of comparatively little economic value — for irrigation, power, fisheries, communications or otherwise — partly because of the hilly terrain through which they flow and partly because of the inadequate water flow in them.

Complementarity with Punjab

1.4 The Territory is split into two parts, the district of Chamba being cut off from the other four districts Mandi, Mahasu, Bilaspur and Sirmur by a corridor of Punjab State. As at present the scope for cooperation between Punjab and Himachal Pradesh is large. Roads between Chamba and other Himachal districts have to pass through Punjab. The district of

[1] This is the area according to the Deputy Commissioner. According to the Surveyor-General the area is 10,904 sq. miles.

Bilaspur in Himachal Pradesh provides site for the Govind Sagar reservoir, while the Bhakra Dam constructed over it is controlled by Punjab. The power station at Jogindernagar, though located in Himachal, is owned by Punjab Government. Most exports from Himachal have markets in Punjab and practically the entire import trade flows from Punjab. The forest problems of the two States are identical and so too the solutions. There is much that is mutually complementary between the two States and exchange of experience with a view to concerted action may prove fruitful.

Soil

1.5 Himachal has five soil zones. In the Paonta tehsil of Sirmur, the Balh area of Mandi, the Bhattiyat tehsil of Chamba, the Kunihar area of Mahasu and the larger portion of Bilaspur is found the low hill type soil suitable for wheat, maize, sugarcane, ginger, paddy and citrus fruits. The mild hill type, found in Nahan and Pachhad, parts of Chamba and Churah tehsils, Jogindernagar and Sarkaghat tehsils of Mandi and Rampur, Kasampti, Solan and Kotkhai tehsils of Mahasu, is suited for table potatoes, stone-fruits, wheat and maize. The high hill soil, which is good for seed potatoes and temperate fruits, is found in the Theong, Jubbal, Chopal and Rohru tehsils of Mahasu, Rainka tehsil of Sirmur, Chachiot and Karsog tehsils of Mandi and parts of Bharmour and Churah sub-tehsils and around Dalhousie in Chamba. However, the Mahasu district is ideal for this crop. There is also the mountainous soil, a zone not suitable for agriculture, found in parts of Bharmour, Churah and Chamba tehsils of Chamba district and the Karsog and Chachiot tehsils of Mandi. The dry hill soil area with heavy snowfall, but ideally suited to dry fruit cultivation characterizes the Chini and Pangi sub-tehsils.

Minerals

1.6 Large parts of the Territory have not so far been explored for mineral resources. A recent geological survey of the area records occurrences of various minerals, but gives no correct idea about the quality or extent of the deposits. The Territory's major minerals are salt, slate and limestone; and among the minor ones are iron ore, iron pyrites, mica, gypsum and copper. At present only two minerals — salt and roofing slates — are being quarried. The mineral wealth position of Himachal Pradesh is not very promising. A detailed and comprehensive survey is essential to assess the existing mineral potential.

Forests

1.7 Forests, the backbone of the economy, cover 37 per cent of the total land area, although by the standards of hilly regions the coverage is low. According to the available land-use statistics, Chamba with its dry mixed deciduous variety of trees has the largest area under forests. Mahasu has the most important coniferous types, contributing the maximum to the State income from forests. Bilaspur is the poorest in this respect. Disparity between forest area and output in different districts is marked. There is no proper land-use classification. Valuable timber of various kinds is found, but improved mechanized techniques of extraction and utilization of timber will have to wait for the opening out of areas with motor roads.

Agriculture

1.8 Only a little more than 55 per cent of the Territory is cadastrally surveyed. According to Patwari records about 10 per cent of the land area is under cultivation. In spite of the limitations of cultivable land, agriculture is the mainstay of 94 per cent of the population. The pressure on land is high, and the average, per capita, is less than 0·7 acre. Cultivation of this small area in a hilly terrain and with backward techniques has naturally resulted in farmers earning pitifully low incomes.

1.9 The principal crops raised are potato, wheat, rice, maize, sugarcane, ragi, barley, gram and other pulses, rape and mustard and ginger. Potatoes are exported partly for table use, but largely as seed. Although they are now raised only on 24,000 acres out of 700,000 acres of net sown area, the crop is nevertheless an important cause of soil erosion in areas where it is raised. Being a high income yielding crop, potato cultivation is steadily expanding, and might well become a cause of grave concern to proper land use in Himachal Pradesh, if adequate steps are not taken in time towards soil conservation.

1.10 The official statistics of food production suggest that the Territory is self-sufficient in pulses and cereals; at the same time considerable quantities are being imported from the neighbouring States. Horticulture is the special feature of Himachal Pradesh. The soil, climate, and altitude have all made the Territory ideally suited for fruit culture. About nine per cent of the contribution of agriculture to the Territory's income is derived from fruit and vegetable cultivation including potato. Apple is the most important of the fruits grown and is mainly exported to the plains. The scope for horticulture and other cash crops raises the important issue of the alternative uses of land — food *vs.* cash crops — in the developmental pattern of Himachal Pradesh.

Animal Husbandry

1.11 In the Territory with its wide range of altitudes and agro-climatic conditions, animal husbandry is of considerable importance. The breed of animals is poor and the milk and wool output low. In spite of large tracts of Alpine lands providing natural forage and the forests being utilized for grazing, the number of animals has overstepped the supply of pastures. This has created not only the usual problems of improving quality and reducing numbers, but also the major issue of land use — cultivation *vs.* forest development *vs.* livestock raising.

Industry

1.12 Industries in Himachal Pradesh are of minor importance. In 1955–56 they contributed only Rs. 2·3 crores to the Territory's income. They provided full-time employment to 31,420 persons, of which only 1,018 were in factories. Inclusive of the factories there were, in 1959, only 19 registered establishments employing in all 1,845 persons. There is considerable skill available locally, as in gun-making and woollen textiles, and modern methods are being gradually adopted in these industries which are in the small scale and cottage sectors. The important cottage industry is spinning and hand-weaving, but the production methods are crude and uneconomic. In a Territory with dispersed population, difficult communications and low incomes, these

industries offer opportunities for employment and development; but the major obstacles are organizational, particularly marketing and transport.

Transport and Communications

1.13 Transport and communications are inadequate and ill-developed in Himachal Pradesh. There are only 34 miles of rail track and only two towns, Solan and Jogindernagar, connected by railways, narrow and metre gauge respectively. Except for a few miles of extension, the scope for railways to open up the hilly areas is small. The road system is not geared to the needs of economic development. Even after the progress made under the two Plans there are, currently, in an area of over 10,000 square miles, only 2,400 miles of roads, of which only 826 miles are motorable. Most roads are usable in fair weather and in 1958–59 only six miles of roads were metalled and tarred. The latter is deferred, because it takes some years for the freshly-cut hill sides to get stabilized; there is an ever present danger of roads getting washed away and submerged under land slides during the first few years after they have been excavated in the hill sides. However, in recent years more emphasis is being placed on metalling and tarring, and the Administration expects that by the end of the Second Plan about 100 miles of roads will have been metalled and 50 miles tarred.

1.14 The district and tehsil headquarters and other major towns are also connected by roads; but the interior, which comprises the larger part of the Territory, has only footpaths and forest roads and at best they are only jeepable. Factors holding up the pace of road construction are the difficulties of terrain and the dearth of unskilled labour. The construction of bridges and culverts also bristles with difficulties; the materials needed have to be transported from distant places. Besides, in the hills, the earthwork and widening of formation through rocky strata is one of the costliest items of road construction unlike in the plains where grading and formation are much cheaper and quicker to execute. Therefore it was that in previous years an attempt was made to construct as large a mileage of earth roads as was possible so as to open up as much of the countryside as practicable with the limited financial and technical resources available.

Road Transport

1.15 Road transport since 1949 is practically monopolized by the State Transport Service. This has opened up some of the unprofitable routes, but the freight charges are not low enough to attract traffic. The operation and extension of transport are determined largely by the nature of the terrain. Roads are rough and rugged and their surface uneven; these cause excessive wear and tear to the vehicles. The winding narrow roads limit the speed and reduce the mileage of vehicles. In large areas operation is limited to eight or nine months in the year. The key to economic development lies in the opening up of the interior; and this depends on the availability of adequate and all-the-year-round transport at reasonable costs.

Power

1.16 Power is yet another major economic overhead that is inadequate in the Territory. At present the per capita consumption of electricity is 1.5 kWh per annum and is primarily used

for lighting. About half of this small demand is met from local generation. In 1958–59 only 806,000 kWh out of 1,757,000 kWh consumed was produced locally. The bulk of this was not derived from hydel stations, although the Territory appears to have big hydel potentialities. A large volume of power is purchased from the neighbouring States and some is produced by diesel stations. Two problems that pose themselves are: the role of micro-power stations to supply the interior, and generation *vs.* purchase for other parts of the Territory; i.e., whether the Territory should develop its own power system, or wait for the massive schemes of the neighbouring States to meet its requirements.

Rural Credit

1.17 In the subsistence type of economy of Himachal Pradesh investment in agriculture is low. The burden of indebtedness among the tribal population is rather high as most of it is for consumption and at high rates of interest. However, with the expansion of credit facilities through cooperatives, and developmental loans through Community Projects, the credit situation in the tribal areas has begun to improve. This has resulted in greater confidence in investments in horticulture and in small and cottage industries. In 1957–58, about 793 cooperative societies operated with a total working capital of Rs. 168·64 lakhs. Even so, it was not enough to meet the requirements of farmers.

State Income

1.18 Himachal Pradesh is one of the poorest States. In 1955–56 the total net income generated in the economy was of the order of Rs. 20 crores, giving a per capita income of Rs. 175 compared to Rs. 296 in Punjab, Rs. 232 in Andhra Pradesh, Rs. 229 in Madras and the all-India average of Rs. 261. In spite of large tracts of inaccessible areas, the total net domestic output of the Territory was the largest in Mahasu, being a little more than Rs. 6 crores; Mandi's share was Rs. 3·48 crores, Bilaspur's Rs. 2·10 crores and Chamba's Rs. 2·30 crores. Agriculture contributed 40·9 per cent to the total State income; animal husbandry 28·3 per cent; secondary sources — factory and small enterprises — 11·3 per cent and Government services and professions 9·8 per cent. The share of transport was only 1·9 per cent and of forestry 6·2 per cent. The primary sector contributed nearly 70 per cent, and the secondary and tertiary sectors 11 and 19 per cent respectively. A comparison with some other States brings out the dominant position of the primary sector in the economy of Himachal Pradesh (Appendix 2).

1.19 The predominance of the primary sector, particularly of agriculture, raises two problems. Does the nature of the Territory's economy demand and facilitate a more balanced growth? What should be the sectoral pattern of allocations that should facilitate a rapid planned growth consistent with its natural advantage in resources?

State Revenues

1.20 The Territory has not fully developed its sources of internal finance. In 1957–58 the total revenue was about Rs. 266 lakhs, of which taxes contributed Rs. 45 lakhs and non-tax sources Rs. 221 lakhs. Expenditure on both development and non-development heads is increasing rapidly. The total expenditure on revenue account was Rs. 502 lakhs of which Rs. 126 lakhs

was on non-development services and Rs. 376 lakhs on development services. The share of the development services in the total expenditure in 1957–58 was about three-quarters. Land revenue and excise duties are the only major sources of tax revenue, and in both these there is scope for more collection through broadening the base and enhancing the rates.

Demographic Features

1.21 The population of Himachal Pradesh in 1956 was 1·21 million. The Territory has 10,703 revenue villages[1] and 11 towns. The population is primarily rural, and only 4·1 per cent of the people live in urban areas. The average density is only 102, as compared with the all-India average of 312 persons per square mile. Only five out of the 11 towns have a population of 4,000 or over, the largest town having a population of 9,431. The extent of urbanization is very low, largely because of the nature of the terrain, resources and tradition. The concept of a village in Himachal Pradesh is different from that in the plains. A few huts perched here and there on hill sides surrounded by terraced fields make a village in Himachal Pradesh. On an average a village contains 127 persons. But the low density and scattered nature of the villages do not make for prosperous agriculture.

1.22 Ninety-four per cent of the population is engaged in agriculture, 2·6 per cent in production other than cultivation, 1·6 per cent in commerce, 0·04 per cent in transport and the rest in other services. The districts providing comparatively higher percentage of employment in production other than cultivation are Bilaspur, Sirmur and Mandi. In spite of the large land area and the low rate of population increase, the pressure of population on resources is rather acute.

1.23 Educationally, Himachal Pradesh is backward. According to the 1951 Census, only 70,246 persons, that is, about six per cent of the total population, was literate. Systematic schooling with suitable staff, equipment and premises was first made popular only during the First Plan period. No doubt, considering its high initial percentage of illiteracy, Himachal Pradesh has, during the past decade or so, made impressive achievements. According to a socio-economic survey of selected areas conducted last year, the present percentage of literacy in Himachal Pradesh is estimated at 14·95 per cent in rural areas, and at 51·10 per cent in urban areas. As against 26,399 students on roll in 1947–48, the number at the end of 1958–59 was more than thrice as much. The average hill man is honest, hard working and has a sense of responsibility towards his family and community which can be capitalized for developmental purposes. What he usually lacks is initiative, finance and leadership; the latter, however, is getting more and more organized in recent years.

Participation Rates

1.24 Participation rate in the country is the highest in Himachal Pradesh. This is because of the longer working life of an average Himachali and greater participation by women. With the spread of education and increase in the number of school-going children, the rate might fall. It is possible that with the substitution of cash crops (more so the perennials) by food crops, the

[1] The number of the revenue villages is different from Census villages; the latter was estimated as 8,384 in 1951. *Source:* Directorate of Economics and Statistics, Himachal Pradesh.

volume of under-employment might rise. But the increased incomes generated by the higher value crops together with the development programmes that have been undertaken in the rural areas have, it appears, to some extent counteracted this tendency. However, there is still the need for development of small and cottage industries in these areas so that fuller employment may become available

THE PLANS

1.25 In the two years prior to the First Plan, the Territory attempted to implement a few development programmes, in spite of the dearth of material resources and trained personnel. In 1951–56, Himachal Pradesh had the advantage of two Plans, the Bilaspur State Plan for Rs. 57·1 lakhs and the Himachal Pradesh Plan for Rs. 507·3 lakhs, which together made a total of Rs. 564·4 lakhs. Transport claimed the largest share, 49·9 per cent of the total outlay. The important heads were as shown below:

	Plan outlay	*Actual expenditure*
	(Rs. lakhs)	
Roads	235·2	225·4
Irrigation	55·1	33·57
Education	49·9	45·1
Public Health	39·7	31·2
Agriculture	36·4	27·2
Power	33·1	19·0

1.26 In spite of difficulties such as delayed sanction of schemes, shortage of personnel and lack of equipment and materials, the actual expenditure was 84·4 per cent of the Plan outlay.

Second Plan Outlay

1.27 The Second Plan has an outlay of Rs. 1,472·5 lakhs distributed as follows:

	Allocation (Rs. lakhs)
Agriculture and Community Development	384·7
Power Projects	213·7
Industries (village and small scale)	47·5
Roads and Road Transport	458·8
Social Services	341·0
Miscellaneous	26·8
	1,472·5

1.28 While the First Plan was transport-oriented, the Second is agriculture and irrigation biased, although transport has still a large share of the outlay. Two points of interest are that the outlay on the organizational heads, namely, National Extension, Panchayats and Cooperatives claimed nearly half the amount spent on the agricultural head; and that all the investment on the industries head was on village and small industries. The emphasis is broadly in tune with the future developmental needs.

Three Basic Problems

1.29 The foregoing discussion on physical-cum-economic setting raises three problems of great importance in relation to the economic development of this hilly Territory. One is to determine the role of the Central Government in the economic development of the Territory in view of its limited resources, topography and its location in the border area. As it is, the Territory is very largely dependent on the Centre; for instance, its annual revenue in 1958–59 was about Rs. 2·6 crores and its annual expenditure, developmental and non-developmental, is about Rs. 5.4 crores, excluding the Second Plan outlay of Rs. 14·7 crores.

1.30 The second major problem relates to the mutual advantages of cooperation between Himachal Pradesh and Punjab in working out their programmes of development of forests, fisheries and a few industries.

1.31 A further problem relates to the pattern of growth. The desire to develop industries, particularly of the medium and large types, is marked in all the States in India. The resources and potentialities for the development of these industries in Himachal Pradesh are rather limited. Even the known industrial and mineral resources are not being exploited at present. The pattern of its development, therefore, will have to be largely agriculture and forest oriented for some years to come. If so, will this serve to give the economy an adequate growth rate consistent with the national objective ?

Chapter 2

Agriculture

Special Features

2.1 The Territory is predominantly rural. With hardly 45,000 urban dwellers and 11 towns, it has no town with over 10,000 inhabitants. Ninety-three per cent of the people depend on agriculture, and of these only one per cent is non-cultivating owners. The all-India average for direct and indirect dependents on agriculture is 72 per cent, while the figure for Punjab is 66·3 per cent.

2.2 Agriculture, the all-important occupation in Himachal Pradesh, has its peculiar features, which give rise to special problems and demand special solutions. To start with, only a small part of the land area is in the plains. The region being largely mountainous, cultivation is carried in difficult and slopy terrain. This has led to small and scattered holdings.[1] It has also led to terrace-cultivation, quite a necessity. These features have made irrigation of the type known in the plains, practically impossible. This is indicated by the total absence of tank and canal irrigation except of the *kuhl* type, which utilizes the snow-fed mountain flow (Appendix 4). Also is the conspicuous absence of well irrigation, which accounted for only 63 acres in the whole Territory. Yet another feature is the very limited area of cultivated land, amounting to two-thirds of an acre per capita.

2.3 The peculiarities of the terrain, added to the increasing pressure on land and the unscientific cultivation practices, are responsible for the growing menace of soil erosion, which is natural in hilly areas. Erosion has been leading to three grave consequences—(*i*) the disappearance of soil fertility and even cultivable land (in a Territory already with limited land area), (*ii*) the silting of the five rivers and the few water courses and particularly, the Gobindsagar reservoir; and (*iii*) the gradual undermining of the forest area by loosening the soil and denuding the forests of their fertility and the trees of their footholds.

2.4 These features point to an important aspect of the economic problem of Himachal Pradesh—the top priority demanded by agriculture both in respect of its rehabilitation and in that of preventing the perpetuation of the existing problems.

2.5 The Territory has a wide range of altitudes of agro-economic climatic conditions. It has a more prosperous tradition in horticulture than any other part of India. These physical and traditional factors facilitate the cultivation of a variety of fruits, which would be impossible elsewhere. In Himachal what nature has denied in land area may to a large extent be made up by fruit culture and the optimal use of the cultivable area. The stress, therefore, should be less on food crops, and more on cash crops, horticulture and mixed farming; on increasing agricultural productivity rather than on expanding cultivable area.

[1] 90·1 per cent of the cultivated area is covered by holdings between one to ten acres. The all-India figure in this respect is 78·2 per cent and that for Punjab is 49 per cent.

Statistics of Land Utilization

2.6 A full and correct assessment of agriculture is handicapped by difficulties regarding data. Statistics of land utilization (Table 1) are very inadequate. About 55 per cent of the geographical area has been covered by cadastral survey. The extension of the survey is, no doubt, proceeding rapidly, and in 1957–58 alone an additional 910,000 acres were covered; still, much remains to be done before a reliable base for any assessment of the land problem is to be found. A further point to note is the imperfect and uneven knowledge that is available about the different districts (Table 2). Thus, by 1957–58, the survey had covered only 28 per cent of the area in Mahasu, the most difficult terrain, but nearly 99 per cent of Bilaspur. This makes any up-to-date trend study of land uses difficult and handicaps the estimation of production. Similarly, data regarding crop yields are deficient, because crop-cutting surveys cover only the reported cases in the land revenue records. This difficulty is especially felt in the case of Chamba.

2.7 Two points may, thus, be stressed here: (*i*) inferences drawn and solutions suggested on the basis of a partial survey will have to be scrutinized with care and continuously checked and modified as more data become available and (*ii*) the efforts at completing the survey should be intensified in the immediate future in order to provide a firm basis for conclusions.

2.8 The total area by village papers was 2·97 million acres, of which forests accounted for 0·52 million in the year 1956–57. The area not available for cultivation either because it was barren and unculturable or because it was put to non-agricultural uses was 179,000 acres. Between 1951 and 1956, the barren and uncultivable area diminished, though not gradually or continuously, from 0·95 million to 0·78 million acres. It is difficult to state whether this was because extra marginal land was taken up or because of the change in the pressure of population, or whether the difference was merely due to deficiency in reporting.

2.9 The land put to non-agricultural uses has shown inexplicable variations, rising to 128,000 acres in 1952, falling to 62,000 acres in the very next year, and rising again to 101,000 acres by 1956–57. Such marked variations are intriguing and can be ascribed only to faulty and incomplete reporting and recording.

2.10 Uncultivated land, excluding current fallows, is of considerable interest, both quantitatively and for purposes of agricultural policy and development, as it apparently offers scope for agricultural use. These lands accounted in 1956–57 for 1·54 million out of 6·99 million acres, i.e., about 22 per cent. That this land category has shown a continuous trend towards increase from 0·98 million acres in 1951–52 to 1·54 million acres in 1956–57, i.e., an increase of 66 per cent over the 1951 base, is not encouraging. The reasons for this, if they could be ascertained, would be both interesting and suggestive. This category of land area includes culturable waste which increased between 1951 and 1956, though not to an alarming proportion, from 95,000 to 108,000 acres. The permanent pastures have grown from 0·82 to 1·37 million acres in the same period.[1] There is not much of fallow land. Current fallows accounted for 37,000 acres in 1951 and the figure was not much different in 1956, while other kinds of fallows actually declined in area.

[1] Pasture lands in Himachal Predesh are very badly maintained. A considerable proportion of pasture land is in advanced stage of soil erosion. In these circumstances, any increase in the pasture area should be treated as a relative increase in soil erosion.

2.11 These trends, in a Territory where the livestock population is an important asset and provides an important occupation, are welcome in a way, but in the context of the almost stagnant position of the cultivated area in the face of a growing population, raise two pertinent issues. They are: (*i*) is it practicable and economic to cultivate even a part of this pasture land and (*ii*) if it is not, what are to be the alternative occupations to agriculture for new entrants to the working force apart from a more intensive use of land ?

2.12 Neither the conclusions nor the pattern of facts change when one looks at the land resource data for 1957–58, the latest year for which information is available. Over 30 per cent of the area in village papers was under forests, 41·5 per cent under permanent pastures and grazing lands and only 17·2 per cent was the net area sown. Culturable waste was relatively small in extent, accounting for about three per cent, and current fallow and other fallow lands extended to about 1·1 per cent of the surveyed area.

2.13 All these mean that the net area sown is a small proportion of the total area, that there is very little of culturable waste and that any possible extension of cultivation must come from encroachment on forests and grazing lands. But in a Territory where forest wealth and animal husbandry are no less important than agriculture itself, the problems of alternative land uses and patterns of development assume an unusual significance.

2.14 Districtwise land classification also indicates wide divergences. Thus, Chamba is most wooded having nearly half its area under forests, while Bilaspur is least wooded. Mahasu has forests of very high quality and the largest proportion under grazing lands; and Mandi has the highest proportion of area under cultivation. These marked regional differences suggest that any attempt at changing the pattern of land utilization should be related to the local land use structure, although broad directions of change for the Territory as a whole may be suggested.

2.15 Climate and soil conditions considerably influence the land utilization pattern. At present no definite and detailed information about the distribution of areas in relation to altitudes, climate and varieties of soil is available, and this lacuna is a point which ought to be immediately taken up by the cadastral survey or some other State agency. Parts of the Territory have severe winter and heavy snowfall and in some sections such as Pangi and Chini, inhospitable climate cuts short the cropping season to two or three months in the year. Although this area is also cultivated, its usability is so limited that only quick maturing varieties of crops can be grown. Beyond an altitude of about 10,000 feet, little commercial use of land is possible and this reduces land area available for utilization by about 35 per cent. Moreover, large areas are dry and hilly, suitable only for dry fruit cultivation; the mountainous zones of Mahasu and Chamba with hilly loam soil are also ill-suited for field crops. From the angle of soils, therefore, the districts of Sirmur, Bilaspur and Mandi, and Kunihar and Rohru areas in Mahasu, and Bhandal in Chamba are the only areas with bright prospects of cultivation.

2.16 Another characteristic of Himachal Pradesh is that there are no crop tracts as such, although some areas in the Territory are better suited for certain crops. This is not only because of soil difficulties, but also because of the extremely inadequate transport and communication facilities. Wheat is grown in all the five districts and except in Chamba the per capita wheat acreage does not differ very widely. Small quantities of rice are grown everywhere, Mandi leading with 12·5 per cent of the cultivated area under rice. In Mahasu, potato is the popular crop, but Mandi and Sirmur are actively taking to it. Sugarcane is grown in Balh area of Mandi, Bilaspur and Sirmur. More than half the area under rape and mustard is in Chamba. Cotton is

thinly distributed, Bilaspur having the largest acreage with 590 acres under cotton. In recent years there has been a slight shift in the crop pattern, minor cereals, oilseeds and pulses giving place to cash and root crops like ginger and potatoes. The area under cotton has shrunk while that under tobacco has expanded. But, by and large, the crop pattern has not changed substantially. The absence of crop tracts complicates the planning and effective operation of solutions to agricultural problems.

Crop Pattern

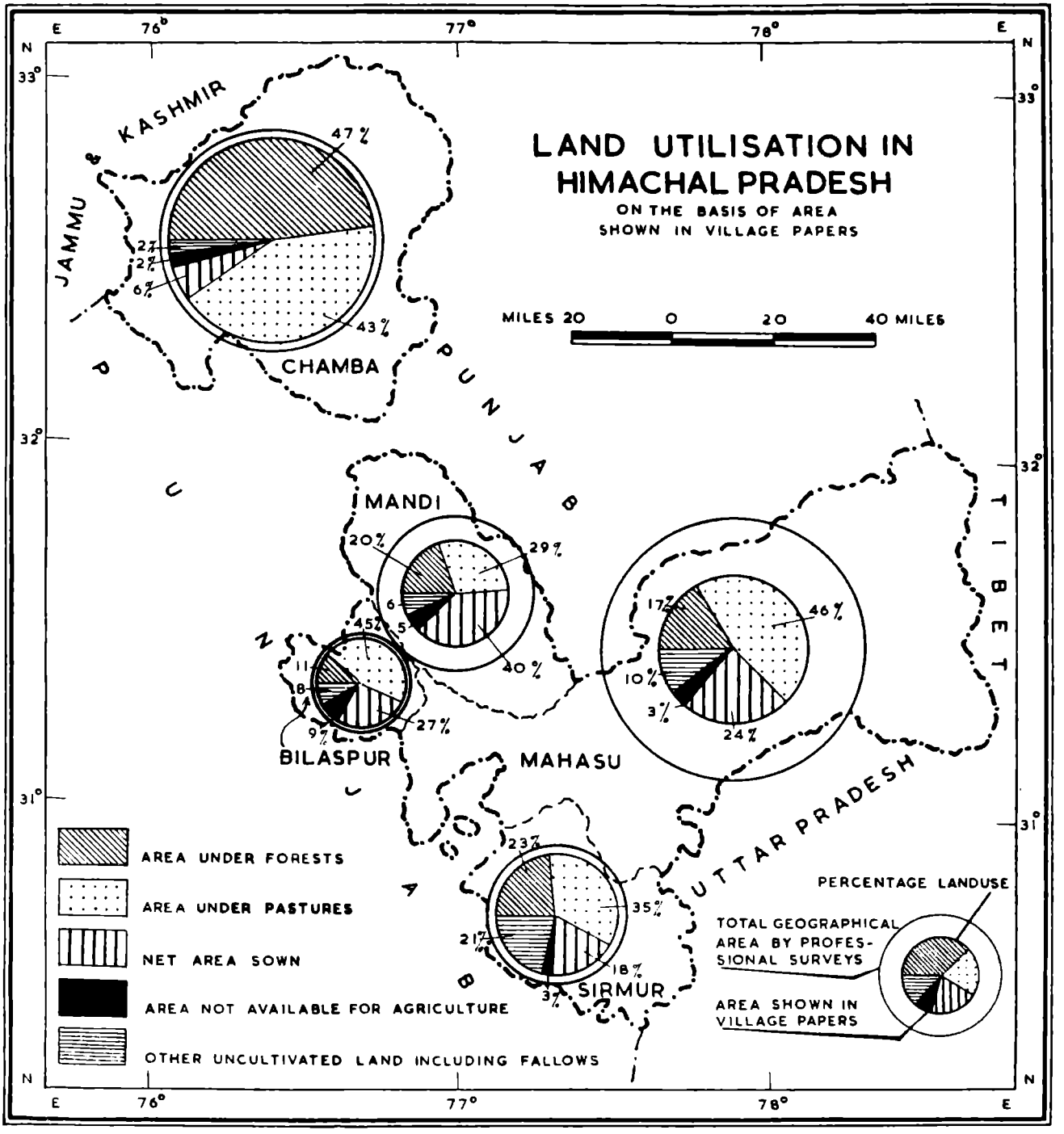
2.17 The main cereals of Himachal Pradesh are rice, wheat, ragi, maize, barley and millets. Other food crops include gram and other pulses. The commercial crops of the Pradesh include sugarcane, potatoes, ginger and chillies. Oilseeds such as sesame, rape, mustard and linseed and cotton, tea and tobacco are also grown (Table 3). Not all these, however, are of equal importance. Wheat is the most important food crop, followed by maize and rice, each having 330,000, 285,000 and 111,000 acres respectively. While the acreage under rice and wheat has been practically steady between 1951 and 1958, that under maize has risen from 280,130 acres in 1951 to 285,400 acres in 1958. Among the cereals, barley and millets with 78,360 and 61,490 acres are the more important. All the major cereals have shown a tendency towards slightly increasing acreage. The area under gram has shown a tendency to increase, but that under other pulses has decreased. By and large, therefore, food crops have shown a noticeable tendency towards expansion in acreage.

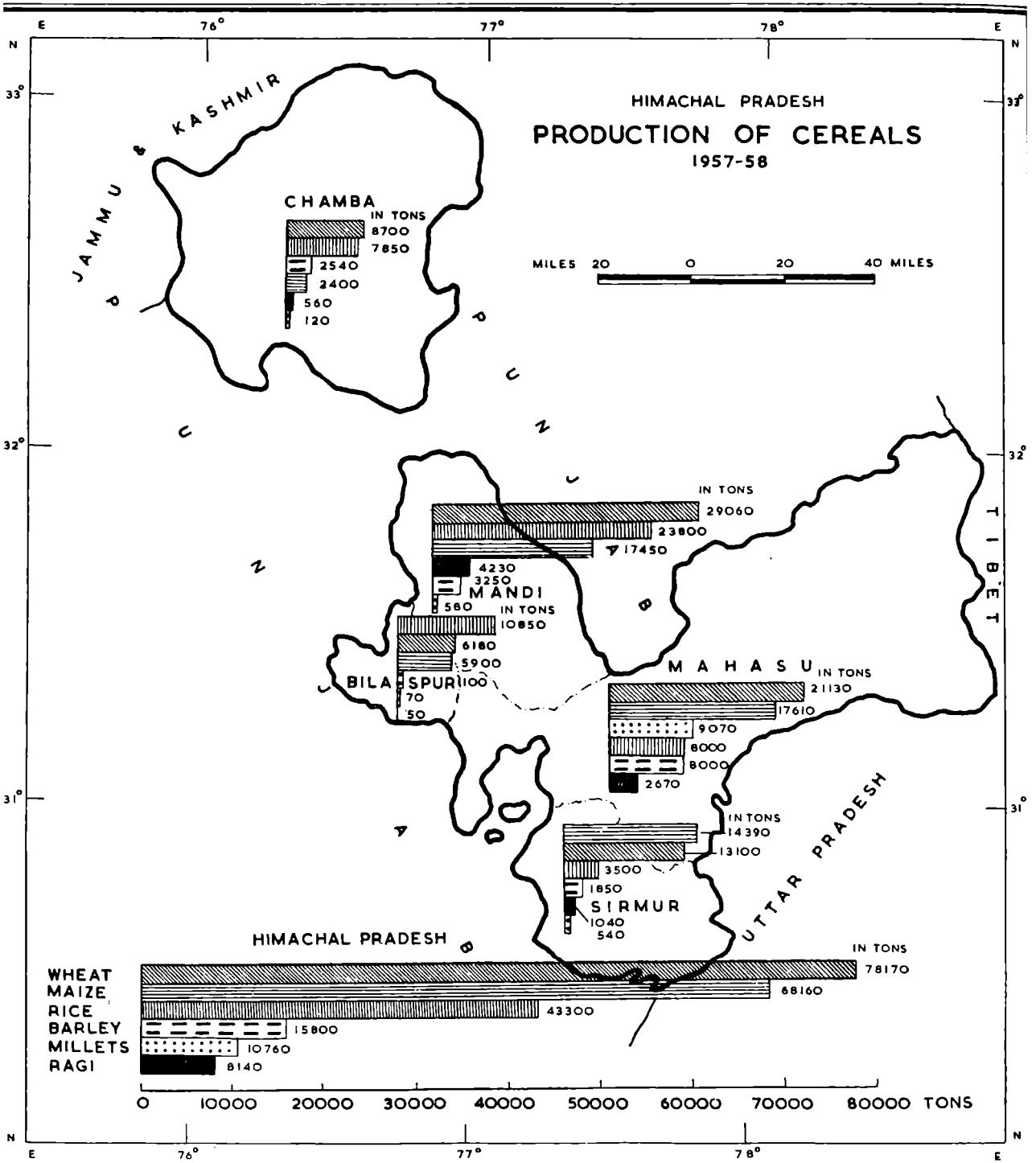
2.18 Non-food crops have, on the whole, expanded relatively more in a few years. Thus between 1951–52 and 1956–57, there has been about 22 per cent increase in acreage under sugarcane, ginger and linseed. Although the acreage is relatively small compared to that under any of the foodgrains it indicates the direction of possible and profitable change in the crop pattern — the shift from food crops to cash crops — if agricultural incomes have to increase.

2.19 The crop pattern may now be examined from the output angle (Table 4). The total output of cereals has, except for ragi and millets, which are not the major food crops, markedly expanded between 1951 and 1956, rice from 27,870 to 39,120 tons, wheat from 60,210 to 78,210 tons and maize from 66,210 to 70,630 tons. Although the area has not shown a relative expansion, pulses, both gram and others, have been increasing. Production of potatoes and, to a smaller degree, sugarcane has increased, while that of ginger has declined. The output among commercial crops has shown varying trends — rape and cotton decreasing, sesame and linseed increasing. But these are at present (1957–58) of very minor importance, e.g., cotton output being only 61 tons and rape 680 tons. The significance of these trends lies in regard to the question, food crops versus cash crops.

Irrigation

2.20 Irrigation holds the key to the short-term problems of agriculture in the Pradesh. Only a very small percentage (13·9) of the cultivated area is irrigated. This is in spite of the Territory being an important watershed with large rivers like the Sutlej, the Beas and the Ravi and small rivers and streams flowing through it. Being glacial, many of these are perennial; but the waters are completely unutilized except for some temporary, crude dams in Mahasu, Mandi and Sirmur districts. Irrigation is very restricted (Appendix 4) in the Territory, partly


LAND UTILISATION IN HIMACHAL PRADESH
ON THE BASIS OF AREA SHOWN IN VILLAGE PAPERS
MILES 20 0 20 40 MILES
JAMMU & KASHMIR
CHAMBA
PUNJAB
MANDI
BILASPUR
MAHASU
SIRMUR
TIBET
UTTAR PRADESH
47%
2%
6%
43%
20%
29%
6
5
40%
45%
11
8
9%
27%
17%
46%
10%
3%
24%
23%
35%
21%
18%
3%
AREA UNDER FORESTS
AREA UNDER PASTURES
NET AREA SOWN
AREA NOT AVAILABLE FOR AGRICULTURE
OTHER UNCULTIVATED LAND INCLUDING FALLOWS
PERCENTAGE LANDUSE
TOTAL GEOGRAPHICAL AREA BY PROFESSIONAL SURVEYS
AREA SHOWN IN VILLAGE PAPERS
E 76° 77° 78° E
N 33° 32° 31° N


HIMACHAL PRADESH
PRODUCTION OF CEREALS
1957-58
MILES 20 0 20 40 MILES
JAMMU & KASHMIR
CHAMBA
IN TONS
8700
7850
2540
2400
560
120
MANDI
IN TONS
29060
23800
17450
4230
3250
560
BILASPUR
IN TONS
10850
6180
5900
100
70
50
MAHASU
IN TONS
21130
17610
9070
6000
8000
2670
SIRMUR
IN TONS
14390
13100
3500
1850
1040
540
TIBET
UTTAR PRADESH
HIMACHAL PRADESH
IN TONS
WHEAT 78170
MAIZE 68160
RICE 43300
BARLEY 15800
MILLETS 10760
RAGI 8140
0 10000 20000 30000 40000 50000 60000 70000 80000 TONS
76°
77°
78°
33°
32°
31°

because of the geological structure, but largely because of the hilly terrain. There are no canals or tanks such as can be seen in the plains. The total area under irrigation in 1951 was 118,000 acres, but by 1956 it was down by 23,000 acres in spite of the new area brought under irrigation to the extent of 11,696 acres in the First Plan, and 17,234 acres in the first four years of the Second Plan. The main reason for this reduction in *kuhl* irrigation, which is the main type accounting in 1956–57 for all but 63 acres under well irrigation, is not clear. It may be noted that water in *kuhls* is diverted from main *khads* by temporary bunds called *malauns*. These temporary bunds are often washed away during the rainy season, and are then reconstructed by the ryots when required. It is likely that there is a relaxation in this practice among the beneficiaries, which has thus affected the area under irrigation. The total irrigated area since 1952–53 has shown a tendency to shrink showing that the scope for expanding irrigation in Himachal Pradesh is highly restricted.

2.21 Tank irrigation as known in the plains is not possible on any significant scale, while the crude *kuhl* variety may continue as it is. Of the other two types — canals and ground-water — there are, no doubt, good dam sites, particularly in Chamba and Mahasu, but their exploitation on a large scale appears impracticable, principally because cultivable area for utilizing the impounded water is limited and the hilly terrain makes it difficult to lead water to the fields. Dams, particularly of the larger variety, would be prohibitively costly in terms of benefits per acre.

2.22 Agriculture is characterized by a high degree of crop intensity. Out of 669,000 acres sown in 1957–58, 399,000 acres were sown more than once giving an index of 150 per cent, the second highest in India. Considered districtwise, the crop intensity is highest in Sirmur and Bilaspur, fairly good in Mandi and lowest in Chamba (Table 5). No districtwise break-up of the irrigated area is available, but it is likely to follow the pattern of crop intensity distribution (the larger the area a district has under irrigation, the higher the crop intensity).

Agricultural Practices

2.23 Such is the magnitude of the problem to be tackled that in spite of the various measures undertaken by the Administration during the First and Second Plans (*vide* paras 2.26 and 2.27) the impact has not been significant. Due to the isolated nature of the Territory, agricultural practices continue to be backward. Crop rotation is not properly done. In the absence of bench-terracing, conservation of moisture is not possible. The iron plough is a rarity, and even the number of wooden ploughs is reported to be inadequate in many parts. The land gets scanty manure and the local manurial resources have not been fully developed. Excepting paddy, where improved seeds cover 14 per cent of the area, local varieties of seeds are mostly used for other crops. In spite of the best efforts of the Administration, the coverage of improved seeds has been only 7 per cent in the case of wheat and gram and 3 per cent for barley in 1957–58. Since then, however, the rate of increase has been faster (Table 8).

2.24 The preceding facts bring out some of the important agricultural characteristics of this Territory: (*a*) cultivated and cultivable area is definitely small; (*b*) existing and potential irrigation facilities are very limited; (*c*) crop intensity is high; (*d*) there are no crop tracts because of the soil and climate and inadequate transport; (*e*) agricultural practices are backward and even primitive but the terrain is partly responsible for this state of affairs; (*f*) the claim of forest development and livestock on land use should be weighed against extension of agriculture; and (*g*) soil erosion is a growing danger affecting the water resources as well as land fertility.

Long and Short Term Problems

2.25 These features give rise to certain agricultural problems in Himachal Pradesh which broadly fall under two categories — the long and the short term ones. The former are of the macro type and relate to agricultural policy. They are applicable to the entire Territory. To this group belong (*i*) soil conservation, (*ii*) food self-sufficiency, (*iii*) single line farming versus mixed farming, (*iv*) extension of land area and (*v*) cash crops versus food crops. Problems of the short period variety relate to agricultural techniques: (*a*) increasing productivity, (*b*) changing the crop pattern and increasing value returns and (*c*) improvements in marketing and warehousing.

2.26 The programme of development during the First Plan included schemes to popularize the use of artificial fertilizers, improved seeds and adoption of plant protection measures, resulting in an additional food production of 15,130 tons. Additional 1,500 acres were brought under orchards. Eleven seed multiplication farms, six potato development stations, three fruit research stations, five progeny orchards, 12 nurseries and a Basic Agricultural School were established. Particular attention was paid towards increase in production of foodgrains and potatoes.

2.27 Under the Second Plan emphasis has shifted to the development of horticulture, particularly, temperate and dry fruits and various cash crops. The Administration is aiming at self-sufficiency in food by the end of the Third Plan. The problem of soil erosion has also caught the attention of the Administration. The physical targets are expected to be achieved under most of the schemes. The only shortfall would be under food production. Out of the target of 44,170 tons of additional foodgrains the production of 30,000 tons is considered to be the most likely achievement. The main reasons for the shortfall are sought in non-fulfilment of the programme under minor irrigation works and short supply of chemical fertilizers.

Soil Erosion

2.28 In hilly terrains, with even moderate rainfall, soil erosion is a serious problem, and this is more so in Himachal Pradesh where erosion is becoming a menace to cultivation, to forests, to grazing lands and to the Gobindsagar reservoir. It is difficult to estimate the extent of erosion, but the regions are known and the causes are obvious.

2.29 There are two broad regions, specially marked by the erosion problem. The first, is the Sutlej catchment area which feeds the Bhakra reservoir. Of the 22,000 square miles of the Bhakra catchment area, 4,320 square miles lie in Himachal Pradesh, 3,120 in Punjab and the rest in Tibet. The area is all mountainous, with an altitude varying from 1,100 feet to 21,000 feet and a rainfall of 35 inches at the dam site to 70 inches on the hills. The silt load in any river is not a constant quantity and depends on the pattern of land use in the catchment area, the growing depletion of the protective ground cover, the current conservation measures, the geological structure and so on. It was originally estimated that the silt load in the Sutlej river was such that it would have taken 290 years for a 50 per cent silting of the reservoir. This perhaps led to the consideration of the problem of conservation in the catchment area as an easy one. The Second Plan has provided Rs. 48,000 for opening a soil conservation school, but the actual utilization so far appears to be Rs. 5,000. There has been such a heavy loss of top-soil that recent thinking suggests that the silt load may be heavier and the danger of silting up of the reservoir nearer.

2.30 The second area of erosion is generally in the other hilly tracts of the Territory. In private-owned forests, which cover about 413·16 square miles, the evil is marked, as the

forests are in very poor condition — treeless, overgrazed and practically neglected. The districts of Chamba and Bilaspur are perhaps the worst affected by erosion, and often cultivated lands have been abandoned because of this evil.

Causes and Cure of Erosion

2.31 The causes of erosion are many, of which the important ones are excessive grazing by livestock, heavy rights of private user of the forests, fires, defective methods of cultivation, lack of planned and adequate conservation of forests and neglect of soil conservation aspects of road construction.

2.32 The multiplicity of causes and the growing menace of the evil ought to compel an all-sided and immediate attempt at erosion control and its subsequent eradication. The major aspects of the solution relate to forests, agriculture and livestock. The first step towards the solution is to regulate the management of the privately owned forests which are in a deplorable condition, and if conditions do not improve, their management may be taken over. Forests, reserved and unreserved, demarcated or not, are at present heavily burdened with private rights and concessions regarding grazing, fuel and even minor forest products. While severe curtailment and adjustment are necessary in these rights, drastic action cannot be taken all at once, because of the backward economic conditions, long enjoyment of user rights, and lack of alternative regions for grazing or openings for employment. The change over must be gradual but firm and planned. The rights should be adjusted to the bearing capacity of the lands in the different regions. An assessment of the bearing capacity may, in the first instance, be made on an *ad hoc* administrative basis, but if it is to be fair, full and scientific, it needs a detailed land use survey, which, thus becomes one of the long-term steps the Territory has to take in the interests of both agricultural and non-agricultural problems.

2.33 The adoption of the most suitable silviculture techniques, particularly special afforestation measures such as the creation of proper reserved forests, ought to claim early attention (*vide* Chapter 5). Immediately and in the context of the silting of Gobindsagar, two specific steps have to be taken. In order to trap the silt flowing down stream, river fringe forests have to be planted; and this requires acquisition of the lands on the river banks, declaration of the areas to the depth of about three or four chains as reserve forests and the plantation of species yielding minor forest products. The second specific step towards forest regeneration is the adoption of the long-term shelter wood compartment system of natural regeneration along with a short-term large scale artificial regeneration.

Soil Conservation

2.34 The necessary soil conservation steps associated with agriculture proper are also many and varied. The Administration should enforce proper land practices, so that every acre is put to the best use possible. This means particular attention to the nature of utilization, which again stresses the need for a scientific land use survey. The objective of such adjustments in utilization is to reduce the pressure on land, whether that pressure arises from cultivation or from livestock. One way of easing the pressure is to shift to the more paying fruit culture. This means an enquiry into the potentialities of horticulture in terms of the current agricultural uses, the regional and climatic considerations, transport facilities and so on.

2.35 Another way of easing the pressure is to change the overall approach to agriculture. Cultivation may be limited to the minimum particularly in the Himalayan regions, and where new lands are to be brought under the plough, it may be limited to areas where permanent cultivation is possible. In case this affects the overall food output, it may be advisable to import and distribute foodgrains by developing efficient and economic transport rather than injure the soil permanently.

2.36 A few specific agricultural measures to facilitate soil conservation relate to the extension of terracing, contour bunding and ploughing, sodding, gully plugging and green manuring of the type which conserves the soil and its structure and improves the fertility as well.

2.37 As cattle grazing has had impact on erosion, it is necessary to give attention to the livestock problem too. Because of the limited land area and the terrain, as well as the scarcity of alternative means of livelihood, cattle and sheep rearing has a large vogue. It is estimated that the number of cattle is double what the land and its resources could bear, and of this number more than 70 per cent depend entirely on grazing.

2.38 The first step to take, therefore, is to limit the livestock population, and it may even be necessary to prohibit the entry in some parts of the catchment area of buffaloes, sheep and goats whose grazing habits are more destructive than those of cattle. A gradual curtailment of the concessions for non-essential cattle would make large herds uneconomic and will pave the way for improving the breeds.

2.39 Grazing lands themselves may be improved, for instance, by encouraging better quality grasses. This calls for an initial study of the ecological succession of nutritive grasses. Lands may be reallocated on the basis of the most suitable end-uses. Periodic and rotational grazing may be tried. As these steps may reduce the food for livestock, special fodder species (Table 6) of plants may be grown in new plantations and also wherever possible. This would also serve as a measure of fodder insurance.

2.40 In the implementation of all these measures, it is essential to build up the receptivity of the people to them. Soil conservation demonstration plots would serve the purpose of acquainting them with the problem and the way out.

Programme of Work

2.41 Even the correct assessment of the widespread problem of erosion involves much time and money, and in the absence of dependable land use data, estimates can hardly be accurate. The Union Ministry of Agriculture, in consultation with the Central Water and Power Commission and Punjab and Himachal Pradesh Governments, has indicated the magnitude of the problem in Himachal Pradesh and a programme of development as under:

Type of improvement	*Extent* (thousand acres)
Terracing, etc.	243
Afforestation	375
Grass land improvement	475
Total	1,093

If these measures include also improvements other than conservation, the total expenditure may be estimated at Rs. 27·7 crores.

2.42 The magnitude of the area to be covered and the cost involved suggest that the work should be spread over years. The body referred to above estimated the time needed to complete the work of soil conservation as 20 years. According to some, the target relating to time is rather ambitious. A less ambitious programme, which is also being considered for immediate implementation, would be as given below:

	1961–66 (Acres)	*Cost per acre* (Rs.)	*1961–66 Total* (Rs. lakhs)
Terracing	25,000	550·00	137·50
Afforestation	75,000	100·00	75·00
Grass land improvement	25,000	48·00	12·00
	125,000		224·50

The area under each head may be doubled in the Fourth Plan period. The best agency for carrying out afforestation should be the Forest Department rather than the Department of Agriculture.

The Self-sufficiency Goal?

2.43 If self-sufficiency in food is to be the goal for Himachal Pradesh, the quantum of food-stuffs required to reach it with the present population may be assessed in terms of the balanced diet set up as the objective. The composition of this diet may be as indicated below:

	(Ozs.)
Cereals and pulses	18
Vegetables	10
Milk and products	10
Meat, fish and eggs	4
Fruits	3
Miscellaneous	4

2.44 As against this, the production of cereals and pulses was 196,600 tons (in 1951–52) which, with 12½ per cent deducted for seeds and waste, gave 15·2 ozs per capita, and, in 1957–58, 232,150 tons calculated on the same basis gave 17·5 ozs per capita, or 20 ozs adult equivalent. This would mean that the Territory taken as a whole has already reached self-sufficiency in foodgrains. According to trade estimates the Pradesh imported a minimum of 2,000 tons of rice, wheat and wheat flour in the year 1957–58 and the official reports describe the Territory deficit in foodgrains. This however seems to contradict the current experience. This may be

because of the bottleneck in transport, the higher consumption of foodgrains in hilly areas, and the grain that goes to feed the livestock.

2.45 But sufficiency has to be adjudged continuously in terms of the growth of population, on the one hand, and increase in production, on the other. In view of the soil structure and terrain of the Territory, the scope for extension of the area under cultivation is limited. It may also not be possible to increase the productivity of land beyond a certain limit in view of the limited scope for extending irrigation. Again it is likely that with the opening up of many areas by road transport some shift from food to cash crops will take place. Population, on the other hand, is increasing and is expected to touch 1·23 million mark in the year 1966, suggesting that for an enduring and profitable solution of the food problem the Territory should develop agricultural complementarity with Punjab; Himachal Pradesh supplying horticultural products to Punjab in exchange for foodgrains.

2.46 In other components of a balanced diet Himachal Pradesh appears to lag behind. The limitation of cultivable land and the necessity for supplementary occupations in rural areas suggest that greater attention should be paid to horticulture and animal husbandry if self-sufficiency in other products also is to be reached. But these facets of food supply are slower of development and, therefore, self-sufficiency from the angle of balanced diet may not be reached in the next decade.

Mixed Farming

2.47 This leads to the problem of mixed farming. Although like farmers elsewhere, the Himachal cultivators generally keep livestock for ploughing, transport, milk, wool or meat, this has been only casual, and little effort has been directed to make the livestock a major source of income. The main reason for this appears to be the poor quality of the livestock, lack of adequate fodder, tiny holdings and absence of facilities for marketing the livestock products. The conditions of agriculture described above suggest that the scope for marked increases in agricultural incomes from cultivation proper is limited and, therefore, to augment the rural income, to provide for seasonal employment and to supplement the food needs of the cultivator with eggs, meat, milk and milk products, diversification of occupation is essential. Mixed farming, cultivation and livestock keeping ought to move in the direction indicated later.

2.48 Mixed farming is not practicable at all altitudes because of climatic and terrain factors. Thus, above an elevation of 7,000 feet the nature of cultivation itself changes and so does the type of livestock that could be profitably maintained. Broadly speaking, mixed farming of a planned variety should be accepted as the basic agricultural policy. In the plains the primary emphasis should be on cultivation as the rearing of milch cattle, sheep and goats is of secondary importance. At altitudes upto 3,000 feet, the development of agriculture and livestock should be equally emphasized; between 3,000 and 6,000 to 7,000 feet, where cultivation becomes a little more difficult, the emphasis should be increasingly shifted to animal husbandry; and at heights ranging from 7,000 to 10,000 feet sheep and goat farming should become the main occupation. That is, there should be a variation in the relative role of agriculture and animal husbandry and of the type of livestock.

2.49 This kind of stratification requires attention to be directed to three things: (*i*) the breeding and introduction of a profitable type of livestock suited to the cultivation pattern,

available fodder, the terrain and the existing tradition; (*ii*) the provision for bettering fodder supplies; and (*iii*) easy and economic means of transport for marketing the livestock and livestock products. But basically, the agricultural pattern has to be of the mixed type.

2.50 Similarly, wherever the physical conditions are favourable, the shift in the economy should be to a comparatively more remunerative pattern. This problem will be discussed in detail under horticulture.

Cash Crops

2.51 One of the obvious ways of bettering Himachal rural income position is to adopt crops that pay most per acre and per unit of input, i.e., substituting cash crops for food crops. As already mentioned, the return differences between the two are very marked; an acre under apples yields on an average Rs. 5,000 (gross) whereas one under wheat yields Rs. 150. But certain external factors like adequate transport and markets should be available for a wider adoption of cash crops.

2.52 In Himachal Pradesh, apart from fruits, important cash crops grown at present are potatoes, ginger, sugarcane, vegetables and medical herbs, but their cultivation is insignificant compared to food crops. In 1951–52, 94 per cent of the cultivated area was under food crops, and in 1957–58 it was 93 per cent which indicated the great hold food crops had in the subsistence economy of the Territory. A regional analysis suggests that at present the response to a change over to cash crops is not uniform in the districts. This indicates that currently there is no noticeable shift to the more paying crops, although a shift from wheat to potatoes doubles the return per acre.

2.53 While the cultivated area is static, the total output of cash crops, however, is expanding, largely because of improved techniques in cultivation and also higher prices in the market. Between 1951 and 1957, the total output increased by 31 per cent as against the increase in output of the foodgrains by 18 per cent. The type of crops, which are increasing, is also suggestive. Expansion in fibres was marked. Thus, in Mandi they increased ninefold in 1951–57 and in Mahasu by over 100 per cent; the output decreased in Chamba and Bilaspur. While Chamba lost ground in potatoes by 40 per cent and in oilseeds by 21 per cent, Sirmur sustained its position in both.

2.54 A considerable part of this expansion is due to the sustained and planned efforts of the Administration to a gradual change over to cash crops like fruits, potato, ginger etc.

2.55 The crops that lend themselves to further expansion are sugarcane, ginger, chillies, *kathu*, vegetables and vegetable seeds and medicinal herbs: sugarcane in the Paonta tehsil of Sirmur, ginger in the Ramka and Pachchad tehsils of Sirmur, in Balh in Mandi and in Bhattiyat in Chamba; and medicinal herbs in Pangi, Chini and the higher regions of Mahasu and Chamba.

2.56 Apart from the increased production resulting from improved techniques, the area may be expanded in two stages: in 1961–66 double the existing acreage, and in 1966–71 double it again so that by 1971, the area would be four times the present.

2.57 The success of the shift over to cash crops depends on some other essential supporting steps:

(*a*) Making cheap and adequate transport available to the areas of cultivation. This is the king-pin of expansion.

(*b*) Opening up of markets outside the State, particularly for the perishables.

(*c*) Adequate publicity and demonstration among the Himachal farmers to respond to the change-over.

(*d*) Provision of warehousing and other ancillary services.

Consolidation of Holdings

2.58 Holdings in Himachal Pradesh are so small and scattered that the problem of subdivision and fragmentation has become more acute there than in other States and Territories. The total area to be consolidated is about 457,000 acres. The work of consolidation was started in 1954 and by the end of the First Plan, 4,000 acres had been covered at an expenditure of Rs. 61,000. The cost per acre worked out to Rs. 15. In the Second Plan, more determined efforts are being made with a target of 120,000 acres at a cost of Rs. 9·5 lakhs. The cost of Rs. 7 per acre in this case compares favourably with Rs. 11 in U.P. and Rs. 9·65 in Punjab.

2.59 The annual target (Table 7) for the Second Plan years is very suggestive of the slow progress that has been achieved; and that should be expected in any consolidation programme, although the achievement in terms of the targets is improving every year (Table 7). Less than half of the Plan physical target has been achieved in the first three years, but there is still a gap. In spite of low achievement, the expenditure target was kept up, i.e., the cost per consolidated acre was higher than planned. A further unrealistic feature relates to regionwise action. While in Mahasu, there is a gradual increase in the target from 3,762 acres in 1956 to 7,500 in 1960–61, in Bilaspur there is a doubling every year except in 1960–61. The sudden tenfold increase in the Sirmur target for 1960–61 in the course of one year appears amazing.

2.60 In framing the Third and subsequent Plans the factors of cost and the slow progress of the scheme should be kept in view. While conceding that consolidation of holdings is a 'must' in the next two Plans, a realistic target would be somewhat as given below:

	1961–66	*1966–71*
	(In acres)	
Chamba	25,000	27,000
Mandi	35,000	63,000
Mahasu	60,000	86,000
Sirmur	21,000	Nil
Bilaspur	60,000	83,000
Total	201,000	259,000

2.61 The cost of consolidation is also likely to be higher in the next decade. The cost at present is about Rs. 7 per acre, as under:

	Rs. per acre
1956–57	7·50
1957–58	7·50
1958–59	7·00

But the increasing difficulties of the terrain, the growing smallness of fields to be consolidated and the greater reluctance of the farmers would render progress slow and costs higher. It may, therefore, be wiser to put the per acre cost at Rs. 11 which is the same as in Uttar Pradesh. A part of this cost, no doubt, should be recovered in the form of a levy partly as a regulatory measure and partly because of the benefits of consolidation. In 1958 this levy was raised to Rs. 2. It may, however, be desirable to reduce it to the old level of Re. 1 till consolidation is completed.

2.62 The benefits of consolidation, though real, cannot be expected to follow overnight. It has been claimed that during 1956–59 food production in the consolidated areas went up by 25 to 50 per cent. A field enquiry into this aspect instead of a mere estimate would be a more reliable guide for the future. As it normally takes about five years to bring land into proper and full production, and as the farmer takes time to adjust himself to the new set up, output increases should be expected only after the first five years.

Short Period Problems

2.63 Along with the long-run problems relating to the basic pattern of agriculture, the short period ones also demand attention. Here, the objective would be to maximize the productivity of land by the adoption of better agricultural practices. Among them, irrigation is highly important. On the whole, the scope for extension of irrigational facilities is small. However, steps might be taken in a few directions to exploit existing possibilities. In Sirmur, a few minor works with an irrigating capacity upto 1,000 acres could be taken up. Although well irrigation is extremely limited, there appears to be some scope for ground water utilization in the plain areas of Sirmur, Mandi and Bilaspur. The possibility of the use of tube-wells is indicated in Sirmur, but exploration may be taken up in the Third Plan to assess the potentialities and costs. A broad assessment of the irrigation possibilities in 1961–71 indicates an additional 250,000 acres mostly in Mandi, Sirmur, and Bilaspur districts. The entire programme may cost Rs. 6 crores.

2.64 Other agricultural practices may be of two types:

(*i*) Effective, large scale operational variety, and

(*ii*) Experimental, demonstration or pilot projects.

Improved Seeds

2.65 To the former type belongs the use of improved seeds. The cropwise and districtwise break-up (Table 8) of the area under improved seeds indicates that the replacement of local seeds by improved strains has been rapid in respect of paddy. The acreage under improved seeds increased in three years, 1957 to 1959, from 40,000 to 207,000 acres. The increase has been mostly in paddy, larger than the combined area under the others, and smallest under gram. Improvement under paddy has been largely in Mandi, and under wheat and barley in Mahasu. Better seeds can yield about 10 to 30 per cent more of output, but the increase in the total yield depends on the more extensive use of the varieties.

2.66 There are, however, difficulties in the way of markedly extended use, and therefore, of more output in the immediate future. First, existing conditions of transport and communications are distressingly poor, making accessibility and publicity over a large area difficult; second, the availability of seeds has not been adequate. In the face of these difficulties, the Administration

has established a chain of seed multiplication farms throughout the Territory and has also been making sustained efforts to improve communications.

Better Seeds

2.67 The scope for the use of better seeds and more output is particularly large in regard to maize, wheat and pulses. These are possible provided some practical steps are taken, such as: First, increase in the number of seed multiplication farms and also the acreage under existing ones (these may not be run on commercial basis). Second, in every Community Development Block there should be at least two seed multiplication farms which may also serve as demonstration farms; in addition there should also be two seed stores. Third, roads should be extended and demonstration farms should be opened in every tehsil headquarters in the agricultural areas. Fourth, there should be concentration on raising the hybrid varieties of maize in specialized regional farms. Hybrid maize yields over 1,000 lbs per acre as compared to 600 lbs at present. Greater attention should be paid to this food crop and the objective should be the complete replacement of local seeds by the hybrid variety by 1971. Finally, loans and subsidies should be given to the farmers to use more hybrid seeds.

2.68 The objective should be to bring at least half of the sown area under improved seeds for all crops except maize by 1970–71. A coverage beyond this is desirable, but would be hard to achieve in view of the difficult terrain, inadequate transport and communication facilities and administrative shortcomings. In the case of maize, the aim should be to replace the indigenous types with the hybrid seeds. To realize this, concentrated and intensive efforts are necessary. The likely coverage by improved seeds and additional production thereby would be as under:

Crop	*Area (1957–58)* (thousand acres)	*Area under improved seeds* (thousand acres)	*Area to be covered by 1970–71* (thousand acres)	*Total additional production* (tons)
Wheat	330	17	148	6,400
Rice	111	10	45	3,300
Maize	285	–	285	55,000
Other cereals	178	9	80	2,900
Pulses	70	5	30	1,080
TOTAL	974	41	588	68,680

Fertilizers

2.69 Another device to improve output is through increasing the fertility of the soil. The Himachal soil is, by and large, deficient in nitrogen, phosphates, potash and organic matter; and in Chamba and Mahasu continuous cropping of potato and maize has reduced fertility in

some places to sub-marginal levels. The current dung fertilization is inadequate both in nutritive content and in volume, as much of the farmyard manure is lost due to the animals grazing out for the larger part of the year. Green manuring is not popular. Chemical fertilizers are late comers, and at present because of limited supplies and backward cultivation they are reserved for commercial crops, such as potatoes which fetch high prices. For a long time to come, local manures such as farmyard compost and night soil should be the mainstay and attempts should be made to reduce wastage and to develop the local sources. The aim should be to prepare one to one and a half million tons of compost by the end of the Third Plan. Since fertilizers are not in unlimited supply in the Territory and their transport into the interior is difficult and expensive, and since both cash and food crops are important to Himachal economy, it may be desirable in the Third Plan period to utilize half of the available supply for the cash crops and half for the food crops. Although the area under the latter is very much larger, food cultivation is more tradition bound, and, hence the use of the more expensive chemical fertilizers will have to be gradual. Apart from increasing the farmer's receptivity to fertilizer uses, they should be made available at reasonable prices at Tehsil headquarters. The present practice of making manurial and agronomic trials on the fields of cultivators in addition to the experimental farms should be extended and made a permanent feature of rural development.

2.70 With the development of transport facilities in Himachal Pradesh and also the envisaged expansion of the Indian fertilizer industry, the Territory may be expected to consume annually by 1970–71 about 10,000 tons made up of 5,000 tons of nitrogenous fertilizers and 5,000 tons of phosphatic fertilizers. The additional production of foodgrains thereof may be estimated to be of the order of about 5,000 tons.

Plant Protection

2.71 Plant protection is another method by which output could be increased. Although plant pests and rodents destroy about one-tenth of the produce, both the technical staff and the areas covered are limited at present. In 1961–62 a start should be made towards more serious efforts to combat pests. At least an area of 150,000 to 200,000 acres should be brought under the scheme in 1961–66, and an additional 250,000 acres in 1966–71.

Technical Staff

2.72 This requires a large technical staff and as it is not locally available, it has to be imported from other States; and in order to induce the ready flow of such personnel, special service conditions such as higher allowances should be offered. Meanwhile, efforts should be made to train up local men. In addition to the additional staff, insecticides should be supplied more generously, and subsidized for the next five years so as to make the price not prohibitive.

Agricultural Implements

2.73 Particular attention has to be paid to agricultural implements. Agriculture in Himachal Pradesh has to be carried on in a hilly terrain and, therefore, in small terraced fields. Implements of the plains do not suit the hills. New designs adapted to the peculiar type of cultivation have

to be invented and for this purpose research-cum-testing centres should be established. At the same time, improved implements should be popularized through demonstration.

Research and Training

2.74 Equally important is the attention to agricultural research, administration and marketing. Agricultural statistics in Himachal Pradesh are highly inadequate and frequently inaccurate. Recently the Department of Statistics and Economics has undertaken surveys and collection of various kinds of statistics, but a more intensive effort with more of personnel is needed. Regular sample surveys should be organized to secure fairly reliable estimates of area and production. Such an effort may profitably be made as a part of the broader field of agricultural research on its agronomic and economic sides. As at present such research organizations are practically non-existent in the Territory.

2.75 There is urgent need for improving the administrative aspects also. The existing facilities at the block level may be strengthened, particularly in respect of the farm advisory services, by providing more of technical personnel. Immediately, the training programme can be reinforced by starting one or two agricultural schools, one to serve Chamba and the other the remaining four districts. This should also lead to the establishment of an agricultural college as well. Marketing services could be improved, and a beginning may be made in 1961 with one regulated market for potatoes in Mahasu followed by two more in Bilaspur and Sirmur. This number may be doubled by the end of the Plan. Steps should be taken to improve the marketing of cash crops through cooperatives and by regulating trade practices.

Optimal Use of Land

2.76 A resumé of the problems of agriculture and steps taken to solve them which have been discussed above shows that short-run and long-run objectives jostle with one another. The broad objective of the agricultural development policy should be the optimal use of land. A phased programme of transferring the land to its recommended use should be drawn up and implemented, as the necessary changes in transport and marketing facilities develop.

HORTICULTURE

2.77 In view of the limited land resources, horticulture is an important method of improving the income in the rural areas of Himachal Pradesh. The Territory is noted for fruit cultivation (Table 11). The area under orchards and vegetable farming, including potatoes (in the year 1956–57), was estimated at 29,000 acres. It was a little more than four per cent of the net area under field crops. The gross income from fruits was of the order of Rs. 7·6 lakhs and from vegetables Rs. 65·7 lakhs, of which potatoes contributed Rs. 55·4 lakhs. According to NCAER estimates of State income, the share of agriculture, including horticulture, was Rs. 8·19 crores in the year 1955–56. In the current year it is probably over Rs. 9 crores. Although the exact contribution of horticulture cannot be definitely stated, a conservative estimate would be of the order of eight per cent of the share of agriculture.

Potato

2.78 Potato is grown in all the districts (Table 9). For the Territory as a whole, the area under this crop and the average yield per acre are increasing. Because of the higher value return of seed potatoes, their cultivation is extending largely at elevations over 6,000 feet as potatoes grown at such altitudes are free from virus. The progress in the different districts is not the same. In Mahasu, where it is the most important single cash crop, the acreage increased by a third between 1951 and 1956 from 12,162 to 16,024 acres. But in Chamba the acreage was reduced by 30 per cent from 1,225 acres to 871 acres. Bilaspur is hardly important for potato.

2.79 The Administration has been specially active with regard to potato culture and has been trying to extend the area under the crop and to increase production by popularizing better seeds. Marketing is being improved through the certification of approved growers. These led to the promulgation of the Potato Control Order and other steps which undoubtedly have borne fruit. However, the Potato Control Order was withdrawn by the Government of India, although the Territory's administration was convinced of its usefulness.

2.80 Potato development scheme, however, needs closer examination. As all the available area suitable to it has already been covered, the farmers have begun growing the crop on sharp hill slopes, sometimes as acute as 70°. This has resulted in heavy soil erosion, obvious in many parts of the Mahasu and Chamba districts, where the fields have been abandoned. There is also another aspect of the problem. The increase in potato output has been more due to extension of the area under the crop than to any increase in the per acre yield. The per acre yield has remained more or less stagnant during the last eight years. The yield also compares unfavourably with what obtains elsewhere (Table 10). As this is due to inadequate manuring, the immediate solution is the stepping up of the output per acre through better and more fertilizers.

Vegetables

2.81 Vegetables other than potatoes cover a little more than 4,000 acres. The Territory is well suited for growing vegetables such as cabbage, cauliflower, tomato, carrot and turnip, and quality seeds of most European vegetables can be produced at the high altitudes. The demand for seeds is large and as the product has high value in small bulk it has been possible to supply a wide market in spite of the poor transport facilities and high transport cost. With improved and cheaper transport, it should be possible to grow more of these seeds. Mahasu is the important district for vegetables and Mandi and Bilaspur also contribute their share. But Sirmur has very little to show in vegetable culture. Onion is popular in Bilaspur and Mandi, but other districts grow very small quantities. The scope for extending the area under vegetables is particularly large in Sirmur and Mandi, and considerable in the other districts. As vegetables yield a larger return per acre and an extensive market can be developed for the output, greater attention should be paid to their cultivation.

Fruits

2.82 The fruits produced in the Pradesh fall under four categories — sub-tropical fruits, stone fruits, pome fruits and dry fruits. Sub-tropical fruits grow at altitudes ranging from 1,500 to

3,000 feet, stone fruits at heights ranging from 3,000 to 6,000 feet and pome fruits grow at ranges between 6,000 and 8,000 feet. Dry fruits are grown in Kinnanaur and Pangi areas at 6,000 to 9,000 feet elevation.

2.83 Production trends show that while the culture of apples and citrus varieties is expanding, walnuts, wild varieties of apricots and of peaches are fast losing ground. In Mahasu, orchards have become popular, but Chamba has hardly started anything on that line. Fruit cultivation in Bilaspur is not only small, but declining. Apple, the most important horticultural product is grown mostly in Mahasu and the citrus fruits in Sirmur. Dry fruits are grown in the sub-tehsils, Chini and Pangi, while the temperate varieties are found in Mahasu, Mandi and Chamba. Citrus is grown in Mandi as also in Bilaspur nurseries and at research stations. Only Mahasu grows pome fruits in a large way.

Horticulture Development

2.84 The Administration is fully aware of the role of horticulture and in the last few years it has been attempting to encourage fruit-growing. During the First Plan three fruit research stations were established, two in Mahasu and one in Sirmur districts. In the former district the potentialities of producing dry fruits were explored at Chini and work connected with temperate fruits was started at Mashobra. A research station on sub-tropical fruits was opened at Dhaula Kuan (Sirmur); four progeny orchards were also opened, and 22 nurseries were established. Under the Potato Development Scheme six research stations were set up. Much work has been done under seed certification; a programme of inspection of growing potato crops in the holdings of approved and certified growers was evolved. A vegetable multiplication scheme was also started.

2.85 The Second Plan envisages the plantation of new orchards and the rejuvenation of old ones; and has a target of 7,500 acres under orchards. Short and long-term loans are granted for these purposes. The schemes started under the First Plan are programmed to continue. The potato development scheme of the First Plan is in operation and, so far, eight research stations have been established. A vegetable research station is at work in Solan. In a long-range horticultural programme potato development should be considered more rationally, for, in the interests of immediate gain, the Territory's future should not be endangered. In changing over to more remunerative land uses than the prevalent ones, the alternatives are potato and fruit growing. Whereas fruit trees start yielding after five to six years, potatoes offer immediate return and the temptation is to turn to the latter. But in the long-run, fruit culture is preferable both economically and otherwise. Its extension requires a liberal loan policy to enable the farmer to tide over the period of five to six years of waiting and also to finance the purchase of fruit samplings. In order to reduce soil erosion, potato cultivation should be prohibited on lands with slopes of more than 45°, and similar restrictions, which are of a technical nature, should be imposed.

2.86 The larger part of the output is for export. Already two-thirds of potato output is exported for seed purposes, meeting about 20 per cent of the seed requirements of the entire country. Himachal fruits, seeds and vegetables have a wide market, and the potential market is very large. But development in this direction is closely linked with adequate and quick transport and marketing facilities. Transport is particularly important because vegetables and fruits are perishables and there is no fruit preservation industry in the Territory. The existing

methods of transportation by headloads and pack animals is necessarily slow in difficult terrain. As there is no regulated market, the smaller producers are often forced to sell their produce at the nearest market place as and for any price that they can get. Lack of grading of fruits further depresses the prices.

2.87 These limitations have stood in the way of the Administration in their efforts to popularize fruit culture and vegetables among smaller farmers. The larger estates with their central collection centres, at places from where the transport is easier, have been doing profitable business. The Himachal farmer is mostly of the very small category and is wedded to the traditional lines and as such, he shall have to be persuaded to take to fruit culture. This requires the removal of the prevailing limitations. The Administration has a programme of garden colonies, which if successful, can help medium and small farmers.

Condition of Small Farmers

2.88 Meanwhile, a four-pronged approach can be suggested to help improve the lot of the small farmers. First, there has to be provision of free grading facilities at places of collection or existing marketing centres; second, provision of cold storage and warehousing facilities at nominal charges is necessary at such centres; third, improvement of transport facilities from the collection centres to the main markets is required and lastly, the elimination of middlemen by the formation of fruit growers' cooperatives is urgent. A model factory for canning and processing fruits may be set up at a suitable place either in Mandi or the Mahasu district. But the major solution lies in opening up the potential fruit-growing areas by constructing all-weather roads and providing quick and economical transport. Given these, it should be possible to treble the area under fruits by the end of the Third Plan. The analysis will hold true of vegetables also.

Land Use Survey

2.89 A basic requirement for planned and phased expansion is soil and land use survey. It is possible that the survey may suggest that some areas now under cereals in the districts of Mahasu and Chamba may profitably come under potato. The extent of available area, situated at altitudes of 4,000 feet to 6,000 feet, may be about 5,000 acres in Mahasu and about 3,000 acres in Chamba. While indiscriminate extension of the area under potato is fraught with danger to soil stability, it will be conceded that with better techniques of cultivation, good seeds, adequate manuring and soil restoration practices, it should be possible to double the potato yield from about one to two tons per acre. The emphasis in any long-range scheme should be on larger output per acre and, therefore, on scientific cultivation rather than on the extension of area.

2.90 To sum up, while horticulture has caught the imagination of agriculturists in general, it has not been very popular with small producers, mainly because of practical difficulties in the sphere of marketing. In inaccessible areas the desire for self-sufficiency in food guides land use, and so horticulture and vegetable farming are not developed; while in accessible regions immediate and quick returns, as in potatoes, rather than the long-run results determine the land use. Mixed farming, i.e., horticulture along with food crops, is not popular. While in the long-run

interests of the Territory fruit cultivation should be extended, the key to success would again be adequate transport and communication facilities.

Commercial Aspects of Horticulture

2.91 Himachal Pradesh should have a really ambitious programme for growing orchards during the next decade. While care appears to have been taken in the direction of propagation of fruit plants, much remains to be done on the commercial aspects of horticulture. The Administration has recently moved the Centre for enforcement of the Agriculture Produce Market Act. When this is implemented, conditions can be expected to take a turn for the better. The related facilities still to be provided are storage and warehousing facilities at suitable places. The Administration should not allow the local products to lose their markets due to malpractices by traders. A plan for fruit production showing the land coverage under different types of fruits and vegetables should be prepared. To correct imbalances in areas under different types and trees, proper incentives by way of fixation of minimum prices and other facilities can be given to the growers. The plan for fruit production should be based upon a thorough study of production possibilities and markets.

Chapter 3

Animal Husbandry

Contribution to Territory's Income

3.1 In no other State or Territory of the Indian Union is animal husbandry so important as in Himachal Pradesh. In 1955–56 its contribution to the Territory's income was about 22 per cent,[1] which was second only to that of agriculture. This may be compared with the 9·7 per cent income generated in this sector in Punjab and 0·5 per cent for all-India. As most people who occupy themselves with the rearing of animals also work on land, it is not possible to correctly estimate the volume of employment provided by this sector; but considering the large number of tribal families and their main dependence upon stock rearing, animal husbandry appears to provide employment for about 10 per cent of the population.

3.2 Terrain considerably influences the categories of animals kept and their number. The large tracts of Alpine lands that provide natural forage during summer can be used only for grazing. The wide range of altitudes and agro-climatic conditions make possible the rearing of sheep, goats, cattle, buffaloes, ponies, pigs and yaks. But the number of animals have been overstepping the limited supply of pasture lands (Table 13). More and more pasture areas are afforested and *nautors* are granted for cultivation to increase food output. As there is already a shortage of cultivable land for producing human food, any transference of land to grow green fodder may not be possible. Similarly, only a little quantity of concentrates can be found for cattle consumption. The Territory, thus, is deficient both with respect to quantity and quality of forage and fodder.

Cattle and Buffaloes

3.3 There is roughly one head of cattle per capita of the population and buffaloes numbering about 200,000 are in the proportion of one to every four persons. The latter are growing relatively fast. The predominance of cattle among the total livestock, especially females over three years, is due to their dual role. On account of the prevailing tradition and the difficulties of the terrain, buffaloes are not commonly used for ploughing. The growing shift from the cow to the buffalo which yields a larger quantity of milk has its repercussions upon the availability of draught power. This aspect of the problem is already noticeable in the trend of cattle population. During 1951–56 there was a marked fall in breeding bulls, which may be responsible for the slower rate of growth among the follower stock. Already the ratio of breeding bulls to cows is very low, being 0·4 to 100, compared to the ratio of 2·6 to 100 in the case of buffaloes and the all-India figure of 1·5 to 100 for both species.

3.4 Another matter of concern is the decreasing number of milch cows. It is true that the quality of both the breeding bulls and cows is poor. Perhaps, a vast majority of them are useless

[1] NCAER estimates.

as breeders of better types of animals. But there is not much scope for reducing the number of either of them without creating adverse effects upon the whole economy. If milk yielding capacity were the only consideration, all cows giving less than two pounds of milk should be eliminated. But, such action would mean removing the source of 72 per cent of the milk supply against the background of existing shortage and will lead to a gap which buffaloes cannot fill for a long time. Also, it will make the replacement of bullocks very difficult. The ratio of breeding bulls to breeding cows established through the years has to be maintained, especially so in an area where transport of animals from one place to another is difficult.

3.5 The problem may be viewed from another angle. In Himachal Pradesh a pair of bullocks ploughs 5·6 acres of land as compared with the all-India average of 8 acres. The lower performance in Himachal Pradesh is because of rocky soil, tiny holdings and difficult terrain. In view of the lower performance and the time required for bettering the breeds, the present availability of draught power should be assessed carefully in terms of power requirements in the Territory before a policy of cattle destruction could be advocated.

3.6 Mandi and Mahasu are the richest districts as regards cattle wealth (Table 15), each accounting for 10 per cent of the total. In 1951 there was concentration of working bulls in Mahasu and Mandi and the number was least, both relatively and absolutely, in Bilaspur. In Chamba the number of breeding bulls appears to be out of proportion to working bulls and cows. Their number is the lowest in Bilaspur where bulls, useless both for working and for breeding, are the most numerous. Breeding cows are most numerous in Mahasu and least in Bilaspur. Although the situation had changed a bit by the end of the First Plan, regionwise peculiarities still persisted in 1956. This disparate situation should be borne in mind when attempting to build up a scientific livestock plan.

Sheep and Goats

3.7 Sheep and goats (Table 15) hold an important place in Himachal Pradesh economy, providing meat, wool and goat hair for weaving apparel. Sheep and goats, whose number is slightly larger than that of cattle, increased from 1·20 million in 1951 to 1·35 million in 1956. But, in spite of the large number, their productive capacity is very small. They are of inferior quality and the mortality rate is high. A sheep yields two pounds of wool per year and a goat only half a pound of hair. It is estimated that the per capita availability of meat in the Pradesh is only 0·26 oz., i.e., about a fifth needed for a balanced diet. Regionwise, sheep are more important in Mahasu and Chamba and goats in Mandi, Sirmur and Bilaspur. This is due to the factors of climate, altitudes, grazing facilities and social traditions.

Livestock Problems

3.8 One of the minor livestock problems peculiar to the Territory pertains to the influence of altitude and climate. The former range from 1,500 feet to 22,000 feet and the climate from the temperate to the Alpine; and thus, the types of cattle that can be used or are needed are necessarily different in different districts and at different altitudes. In altitudes above 5,000 feet buffaloes cannot survive but only hilly cattle can, while above 10,000 feet a hybrid yak-cow alone can thrive. The breed of cattle is nondescript and of inferior stock.

3.9 The three main problems relating to livestock are: (*a*) forage and fodder, (*b*) breed, (*c*) disease.

Feeding

3.10 On account of the limitations of land area, altitudinal difficulties and relatively large numbers, one main issue in Himachal Pradesh is the proper feeding of the animal. At present the cattle are under-nourished. Grazing is largely limited in area. The Territory being deficit in foodgrains (even from the angle of human requirement only), there is not much of land to grow fodder crops, nor is there any surplus of foodgrains to be utilized as fodder. To some extent grain husk is available for the cattle and this is estimated to be of the order of one-fifth of the total food production in the Territory. The feeding of concentrates is impossible, because of the poverty of the people and the difficulty of transporting them into the interior.

3.11 It is true that in some areas during and after the monsoon, grazing facilities are abundant, but lack of organized effort at collection of fodder, inadequate transport facilities and absence of storage devices do not facilitate the maximum utilization of whatever little is available.

Fodder

3.12 There also arise other difficulties in the way of fodder supply. Forest regulations are strict and grazing, therefore, in the forests cannot be plentiful. This leads to overgrazing of whatever pasture land is available, but little is done to rejuvenate the pastures, and there is inevitably a continuous shrinkage of the fodder facility. Soil erosion is considerable on account of the terrain, the method of cultivation and deforestation. This erosion takes its toll of pasture lands.

3.13 Adequate fodder supply would be necessary for the rehabilitation of the existing cattle and also for the introduction of new and more efficient breeds. Top priority should be given to the question of cattle food. One apparent solution is the allocation of more land as pasturage or for growing more fodder crops. This solution is not practicable mainly because land area in the Territory is limited, and whatever is available must first be diverted to the production of human food and only secondarily for other uses. Thus shifting the cultivable area from food to fodder crops may be ruled out.

3.14 The second solution lies in preventing soil erosion in grazing land so that the fodder fertility of existing pastures may not be reduced. Measures to check soil erosion have been described earlier.

3.15 A third remedy is to make the existing pastures more productive. There are two main defects of pasturing at present: (*a*) over-grazing, and (*b*) mixed grazing, i.e., both cattle and sheep graze on the same land resulting in all that is available being browsed by one or the other kind of livestock. The remedy for this state of affairs is to re-seed the pastures and, thus, actually to cultivate fodder grass in a systematic way. One method of re-seeding which appears impracticable in the sloping terrain, is the aerial dispersal of seeds. The smallness of the land strips and the mountainous character of the area appear to make the aerial devices not only uneconomic, but also perhaps not fruitful for rejuvenating the pastures. Consequently, the spread of nutritious, fast-growing and climatically suited seeds, through the usual hand sowing by the villagers themselves, seems to be an immediate and practical solution of the problem.

3.16 While it is true that mixed grazing has its repercussions on the pastures, the regulation of grazing in the sense of setting apart different areas for cattle and buffaloes, on the one hand, and goats and sheep, on the other, appears impracticable. Mixed farming not only implies agriculture-cum-livestock maintenance but also often a mixed variety of livestock owned and maintained by the same farmer. It becomes difficult for a small farmer to graze this cattle in one field and the sheep and goats in the other.

Animal Nutrition

3.17 In a smaller way the deficiency in animal nutrition could be made up by the introduction of feed concentrates so as to make up for the lack of minerals in food. However, a long-range solution of the fodder problem lies in improving the productivity of the animals and reducing numbers for which a phased programme of balancing the present needs and the pace of development of breeds should be drawn up.

3.18 The quality of fodder is important in bettering the breeds. Although the Territory offers great scope for varieties, livestock breeds are at present nondescript in character. Inbreeding, inadequate feeding and diseases have led to deterioration of quality of animals. The size of cattle is dwarfish and differs from place to place. During the First Plan period and earlier, sporadic attempts were made to improve the breeds; but it was only under the Key Village Scheme of the Second Plan that serious attention was paid to the stock.

Breeding

3.19 The scheme attempts to upgrade the livestock by having better bulls and more breeding centres and to keep only one breed at each centre. Besides, cross-breeding has also been attempted. The overall result has not been satisfactory, for as against a subsidy of Rs. 20 the feeding of a bull costs at least Rs. 60 and the people, being poor and unaccustomed to such high feeding outlay, have been reluctant to benefit by the Key Village Scheme. This does not mean that its objectives and approach have been faulty. In fact, an extension of the scheme, a more intensive effort at psychologically changing the people and larger financial support to better the breeds, are necessary. Even if the scheme were to cover the entire Territory, a new breed of draught and milch cattle cannot emerge in Himachal Pradesh in less than 25 to 30 years. The process of breeding can only be gradual and a hybrid can but be built up in course of some years. The first difficulty met with in this is the shortage of bulls. In areas where transport is adequate and mobility easy, the practice of having itinerant bulls may succeed; but in the hilly terrain having isolated pockets and not enough roads, this procedure might be less effective. Consequently, there can be only a gradual spreadout of the Key Village Scheme.

3.20 A further difficulty is getting suitable foreign breeds, both of bulls and cows, largely because of foreign exchange difficulties. The difficulty of imported cattle acclimatizing themselves to local conditions is yet another obstacle. It, therefore, appears necessary to develop good Indian breeds suitable to the different altitudes and climates. Hariana cattle might be suitable for regions from 3,000 to 6,000 feet altitude. There does not appear to be any suitable Indian breed for regions of 6,000 to 10,000 feet altitude; Red Sindhi bulls are therefore being tried on a semi-experimental basis for the upgrading of the total stock.

Cattle Diseases

3.21 A good breed needs to be looked after more carefully than a local non-descript. At present, cattle diseases are rampant in the Himachal region, partly because of the infection that is constantly flowing in through the import of cattle from cattle fairs, but largely because of inadequate veterinary facilities. Periodical cattle fairs are at present the main source of exchanging cattle, but many animals bought in these unregulated markets are diseased, and spread infection. To check the spread of contagious diseases in the cattle fairs a check-post has recently been established on the main cattle route at Swarghat to vaccinate and brand against rinderpest. There are also camp dispensaries where arrangements are made to isolate diseased animals.

3.22 The problem of cattle disease has, therefore, to be met in two ways: (i) by regulating the fairs through a process of inspection of cattle brought in, and (ii) through adequate veterinary facilities. Propaganda about segregation of diseased animals would be useful. At present these facilities are inadequate. Between 1951 and 1956 the number of veterinary hospitals and dispensaries has increased from 14 to 35. By the beginning of 1958 they numbered 42, but the number of qualified surgeons in the First Plan period remained static, though the number of other hospital staff increased. Even by the beginning of 1958, there was an increase of veterinary surgeons from 11 to 15 only.

Veterinary Facilities

3.23 It is necessary to have, at least, one hospital for every 10,000 heads of cattle to start with, and very soon the number might be brought down to 3,000 to 4,000 per hospital. The main difficulty appears to be the shortage of qualified veterinary personnel. In view of the backwardness of the Territory, enough local candidates cannot be expected to offer themselves for this training in the near future, although intense effort should be made to train local people. In the interim period, technical personnel from outside Himachal Pradesh should be recruited. Special remuneration should be given to those who will serve in the interior areas.

3.24 Veterinary dispensaries should be adequate in number. This again would be dependent on personnel and equipment which can be built up only gradually. Consequently, it is worthwhile to have mobile dispensaries. But this practice, possible in the plains, cannot be easily followed in the hilly regions; and for effective work their number will have to be large. It is, therefore, suggested that a two-pronged policy be followed: (i) establish permanent hospitals in a phased programme so as to attain the target of one for every 5,000 cattle heads by 1976, and (ii) train local technical staff so that by the end of the Fourth Plan there should be adequate number. Greater emphasis than at present should be placed on the output of veterinary surgeons to man each hospital. In the interim period, 1961–66, recruitment should include persons from outside the Territory. Also, a large number of mobile veterinary dispensaries should be established.

Dairy Problems

3.25 To enhance the profit from animal husbandry special attention should be paid to the dairy industry. Compared to Punjab, which has similar climate, production and consumption of milk in Himachal Pradesh are inadequate. In view of the limited land area and deficit

food output and the consequent need for encouraging mixed farming, it is essential to develop the dairy industry. At present dairy farming is faced with major problems : the overall milk scarcity necessitates the import of considerable quantities of milk and milk products from Punjab, especially into Nahan and Simla. The solution lies in introducing a better milk yielder through better breeding and better feeding. The Red Sindhi type appears to be the best suited and is growing in popularity ; greater effort should be made to make it more popular. As this variety as well as the Hariana cow and the buffalo can thrive in lower altitudes only, it is desirable to concentrate on dairy farming in the plains, from where milk distribution for the rest of the Territory may be tried. For purposes of demonstration, five societies, one in each district headquarters, may be established in 1961–66.

Sheep and Goats

3.26 The sheep and goat population is larger than that of the bovine group. Although there is ample scope for developing better types of sheep and goats, both for mutton and for wool, their quality is not of a very high order. The average wool output per sheep in Himachal Pradesh is about 60 per cent of that in Punjab. The low output of mutton is due to insufficient feeding and poor breeds. Grazing facilities must be improved and, as far as possible, rotational and controlled grazing must be introduced ; and ordinary grazing will have to be supplemented by concentrates. The main difficulty has been the shortage of pedigree rams ; the number of rams raised in stud farms at Chamba and Sarahan is too small to meet all needs. The attempts now being made to improve the local breeds by importing better sires, such as Marine and Pollwoth, should be pursued more vigorously. For the present, one sheep breeding farm in each district may be opened immediately and by the end of the Third Plan the number may be increased to at least three or four in each region.

Difficulties of Wool Growers

3.27 Meanwhile, some of the difficulties which the wool grower is facing at present should be looked into. Wool fetches low prices on account, partly, of bad marketing, and, partly, of lack of processing and grading facilities. Also there is a great deal of waste of material in cleaning and transport. These deficiencies should be immediately looked into and removed by standardizing, grading, demonstrating economic methods of processing, improving and subsidizing, if necessary, the transport of wool and enlarging the local market for wool by expanding the woollen industry. Here again, in all these processes, the cooperatives could be handy. One cooperative processing and production society may be started in each district, and in the more important woollen regions, an additional one may be started later. Immediately a few purchase posts should be set up in Chamba, either by the cooperatives or by the Government so that, at least, two shearings of the sheep owned by *gaddies* can take place locally. A system of cash payment and remunerative prices would greatly add to the success of the programme.

Poultry Development

3.28 Poultry development has great possibilities in Himachal Pradesh, particularly in the lower altitudes. The birds will supplement food and open an avenue for supplementary income

through the sale of eggs and birds. In the Second Plan, attention paid to poultry development resulted in Himachal Pradesh having a regional poultry farm, three district poultry units and three poultry extension centres for hatching eggs, custom hatching and supplying better breeds of chicken. Poultry pens are also being constructed near all the rest houses for propagation of improved strains. In addition to these, there is also a programme to train progressive farmers in poultry keeping. Eighty farmers have already been trained under this programme and more are in the process of training. After training, the farmers are encouraged with subsidy and loans to start their own poultry units. In view of the relatively small investment in poultry farms and large returns from them, it is necessary to intensify this development programme.

3.29 This could be done in different ways: (i) Small demonstration farms could be attached to every veterinary dispensary in addition to starting independent poultry farms. (ii) An intensive programme of training people in modern poultry keeping could be organized and this should not be difficult as they are already used to poultry keeping. Five training centres may be started in 1961–66, one in each district. (iii) Subsidized poultry farms may be encouraged and loans given more freely to help individuals to start farms. There is, of course, the danger of the funds being misused; but this would require the employment of supervisory staff.

Chapter 4

Fisheries

Contribution of Fisheries

4.1 In Himachal Pradesh, as elsewhere, fisheries can serve a two-fold purpose: providing more protein to the largely protein deficit diet of the average citizen, and making the optimal use of existing and potential water resources. As it is, fisheries are playing a very insignificant role in the economy of the Territory. Their contribution to the Territory's income in 1955–56 was about Rs. 0·03 crores (0·1 per cent) out of a total of Rs. 20 crores, compared to their contribution, for example in Madras of Rs. 8·1 crores (1·1 per cent) out of a total of Rs. 732·3 crores. But it is doubtful if in near future the fisheries could contribute very considerably to the Territory's income. The total output of fish is about 6,000 maunds a year, which works out to 0·5 lb. per capita per annum. The output varies from district to district, depending largely on the water resources, being highest in Mandi and lowest in Chamba. The occupation engages about 1,300 licensed fishermen, i.e., 0·13 per cent of the population, for most of whom it is a subsidiary occupation. Perhaps there are a number of unlicensed ones too. Although about 70 per cent of the Himachalis are fish eaters, the fish consumed including small quantities imported is 0·6 lb. per capita per annum compared with the all-India average of 9·5 lbs. Fish is neither exported nor cured in Himachal Pradesh. In fact, the entire fish output is consumed as fresh fish.

Fish Output

4.2 The smallness of fish output is largely traceable to the hilly terrain, fast-flowing rivers, cold water streams, scanty supply of fish food and the absence of large areas of impounded waters. Practically the entire current production of fish is from rivers and streams which altogether are about 700 to 800 miles in length. The great dependence on the natural riverine fisheries and other allied factors had resulted in indiscriminate fishing and consequent reduction in the total catch and size of the fish captured. For long, there was a total absence of conservation measures and planned fish culture. Although recently with the introduction of licensing, the establishment of fish sanctuaries, limiting of fishing periods, and enforcement of other conservation measures, a gradual rehabilitation is coming about in the natural riverine fisheries, not much can be expected from this source of fishing.

Fisheries Development

4.3 Development in 1961–71 will have to be in two different directions: first, the culture of game fish and second, the expansion of food fish production. Game fish, of which trout is the most important variety, would make indirect contribution to the income of the Territory, more through attracting tourist traffic than by the catch itself. The trout are important in fast-flowing

rivers. There are two hatcheries—one each in Mandi and Mahasu—and these should be enlarged so as to produce 300,000 ova by 1965. A new area for trout fishing is the Baspa river in Mahasu, which may be marginally exploited by establishing a small hatchery at Sangla. Another region where a trout hatchery can be opened is at Bhandal in Chamba. These hatcheries as well as the expansion of existing ones and provision of ancillary facilities may involve an outlay of Rs. 6 or 7 lakhs in the decade 1961–71.

4.4 Three things are essential for the trout fisheries to develop satisfactorily. First, roads and paths must be laid, if tourists are to be attracted. The Baspa river, for instance, is at present inaccessible. Communications, therefore, become a basic consideration. Second, camping facilities with rest houses should be provided; and third, wide publicity about fishing opportunities and camping facilities will be necessary.

Food Fisheries

4.5 Food fisheries relate largely to impounded waters — small tanks and large reservoirs. By and large, there is in Himachal Pradesh a dearth of large as well as numerous impounded waters. But to some extent the available irrigation and seasonal tanks may be exploited. Apart from the limited area of these waters, a serious handicap to culture fisheries is the absence of indigenous species suitable for development.

Stock of Mirror Carp

4.6 One important exotic type, however, has been successfully tried in the Territory, and that is the Mirror Carp. In fact, between 1956 and 1959, about 56,000 fingerlings were raised and even supplied to other States; and attention during 1961–71, particularly in the Third Plan, should be rivetted on increasing the stock of this species. The Administration has been pursuing this line of development and 125 acres of waterspread are stocked with Mirror Carp at present, but in 1961–66, another 200 acres should be added. The outlay on this would be about Rs. 2lakhs and if the present stock as well as the additional one is properly exploited, the fish yield by 1966 from these 300 acres is likely to be about 1,200 to 1,500 maunds a year.

Exploitation of Gobindsagar Reservoir

4.7 Another area where food fish, particularly the Mirror Carp, could be profitably developed is the Gobindsagar reservoir, whose waterspread of 30,000 acres has great potentialities. The development programme should be taken up by the Administration and, preferably, at Punjab-Himachal inter-state level. The future exploitation of Gobindsagar as a centre of fishery requires the establishment of either one large or two or three small fish seed farms and an intensive and careful survey for the location of sites. This would involve an initial capital outlay of Rs. 15 to 20 lakhs on each farm and an annual operational expenditure of about Rs. 1 lakh. But the investment is worth making, for, fish production is likely to increase in three years and the ultimate yield may be about 20,000 maunds a year, valued at Rs. 5 lakhs. Further investment on this and other fisheries may be required in 1961–71; and in all an outlay of Rs. 60 to 80 lakhs on the Gobindsagar fish farms and the ancillaries may be a reasonable estimate for the next decade.

Conservation of Wild Stock

4.8 Yet another direction of development relates to fisheries of wild stock. The most important step to take is to conserve the available stock. Conservation measures are, no doubt, already being taken; for example, in 1958–59, eight lakhs of fry were rescued from isolated and drying pools; and fishing is regulated through licensing. But these steps should be extended to the entire Territory and this needs additional staff which may cost in 1961–66 about Rs. 2 to 3 lakhs. Such an extension would increase the yield from wild stock by 2,000 maunds per year by the end of the Third Plan.

Marketing of Fish

4.9 These developmental measures involve attention to marketing, transport and administration. At present, there is no organized market for fish which are exchanged through barter. An attempt was made in 1957–58 to organize fish marketing, but was soon given up mostly for administrative reasons. Highly organized markets may not, at the moment, be feasible because of the limited supplies of fish, and their being scattered over a large area. There are also the difficulties of terrain and transport. Even in the Third Plan period these limitations may be expected to continue. But, if the steps to develop Gobindsagar fisheries, as suggested above, are taken and if the output increases as anticipated, marketing would become an important problem towards the end of the Third Plan. It would, therefore, be desirable to consider even from now on how to market the fish better.

4.10 Marketing should have two objectives: first, to enlarge the market so as to obtain a better price for the catch, and second, to bring about a better distribution of the fish among the consumers. Three steps seem desirable to attain these objectives. Arrangements may be made to collect the catches and bring them to assembly centres. Secondly, provision may be made for facilities of cold storage and quick and inexpensive transport from the assembling centres to the markets. Thirdly, while leaving marketing largely to private initiative, fish marketing cooperatives may be tried and these would, in the initial stages, perhaps over the next decade, require financial and technical assistance.

4.11 These marketing improvements are likely to involve an outlay of Rs. 6 to 7 lakhs in 1961–71.

Outlay in 1961–71

4.12 Thus in the Third and Fourth Plan periods the probable outlay in fisheries may be estimated as under:

	(*Rs. lakhs*)
Fisheries of wild stock in rivers	3·0
Trout fisheries	7·0
Fisheries in impounded waters	2·0
Gobindsagar fishery project	70·0
Marketing	7·0

Strengthening of the Administration

4.13 The success of this developmental scheme requires a strengthening of the fisheries administration. The existing staff may be adequate for the present, but their number will have to be increased and their technical training considerably improved with time. With the development of Gobindsagar fisheries it may be desirable to have a full-fledged fisheries directorate instead of the present subsidiary position the fisheries section is occupying in the Forest Department.

Chapter 5

Forests

Forest Area and Its Significance

5.1 Forests in Himachal Pradesh have a unique importance in the economic set-up both in the present and in the future. By area, they occupy 4,060 square miles or 37 per cent of the Territory.[1] They produce a variety of products, of which, timber, firewood and resin are important. Out of 3,617 square miles controlled by the Forest Department, 3,000 square miles are under working; but felling and logging techniques are capable of improvement, if modern tools and implements are used. The forests also help in establishing the climatic conditions which range from moist tropical to dry alpine, with rainfall ranging from 60 to 70 inches and altitude from 1,000 to 20,000 feet. They regulate precipitation and the flow of rivers and provide a large catchment area for the rivers and the Gobindsagar reservoir. Above all, they protect the soil from erosion, a problem which is serious already and is threatening to get out of hand.

5.2 The large forest area does not, however, mean that it is adequate; for, according to the National Forest Policy standards, 60 per cent of the land area in the hills should be under forests. The Territory has in its hilly tracts a forest proportion larger than the country's average, but still it is low. It has, therefore, been planned to increase the area to at least 40 per cent in the near future. This should be possible without infringing on cultivated area. At the same time the basic forest policy should emphasize the accelerated planned development of the available forest area.

Physical Factors

5.3 The type, value and scope for exploitation of forests depend primarily on physical factors such as geology, climate and topography. The forests are in four parallel zones — the outer zone as in Nahan, Solan and Bilaspur; the lesser zone as in Simla, Chamba and Jubbal; the central zone as in Bushahir and Churah; and the trans-Himalayan zone. All these meet in the Territory giving it a variety of climates and altitudes.

5.4 The altitudes have given rise to different types of forests and products. This fact is very significant because, unlike in the plains, where a uniform forest policy can be followed, in Himachal Pradesh the kind and extent of forest exploitation should be adjusted to the different types. Thus, in the lower hills of Chamba and Mandi, the forest is of the dry mixed deciduous variety containing only scattered trees and in the upper regions from 3,000 feet to 6,000 feet elevation, the sub-tropical pines are abundant. In altitudes between 5,000 feet and 8,000 feet are found the economically most important forests of the moist, temperate, coniferous type, where the actual vegetation is governed by local conditions such as soil and rainfall. In the next 2,000

[1] This area is according to the Survey of India, but the village records put it at a very much higher figure.

feet are found the middle oak coniferous forests, where plants and produce are mixed in character. Higher up, there are the upper oak coniferous and the evergreen dry temperate varieties, e.g., in Pangi and Churah; and at over 10,000 feet, for example, in Upper Bushahir and Chamba, are found the alpine forests, occupied by nomads and their herds and flocks. Naturally these differences result in forests of differing economic significance. Thus, good quality sal is plentiful in altitudes between 1,000 feet and 3,000 feet as in the Dun forests of Sirmur, the Chir pine in regions between 2,500 feet and 5,000 feet and the Deodar and blue pine between 5,000 feet to 9,000 feet.

Economic Importance of Forests

5.5 The area of forests and their economic importance vary in different districts, depending on topography, altitude, soil and other physical factors. Thus, 23·4 per cent of Sirmur district is forest; 19·7 per cent in Mandi, 11·2 per cent in Bilaspur, 47·8 per cent in Chamba and 16·6 per cent in Mahasu. The value of these forests does not depend on area, but mainly on the accessibility and the quality of its resources. Of the 6·2 per cent of the state income from forests Mahasu contributes 62·6 per cent, Chamba 9·1 per cent, Sirmur 10·3 per cent, Mandi 14·6 per cent, and Bilaspur 3·4 per cent. In quantitative terms, the aggregate forest contribution in 1955–56 was 6·2 per cent of the state income or Rs. 1·24 crores of which Mahasu's share was Rs. 0·78 crore and Bilaspur's only Rs. 0·04 crore.

5.6 The absence of a direct relationship between area and contribution suggests two possible and one probable fact of developmental significance. Possibly, the larger forest areas contain barren and waste lands lending themselves little to further development. Or, it is possible that the forest products are not of high economic value, or that some of the forests are at present inaccessible. If this is the case — and even to ascertain if it is so — two developmental steps suggest themselves: first, a systematic and thorough survey of the forest potentialities; and second, the developmental policy in the next decade should be so framed and phased that the valuable resources, in terms of accessibility, markets and outlay, become exploitable.

Classification of Forests

5.7 From the angle of exploitation and management, the classification of forests is very suggestive. Of the total forest area of 4,060 square miles, the Forest Department control 3,617 square miles as indicated below:

Forests classified	*Area* (square miles)
Reserved forests	636·4
Protected demarcated forests	1,133·2
Protected undemarcated forests	1,797·9
Unclassed	49·9

The Revenue Department controls about 433 square miles, of which 413 square miles are privately owned and the rest are unclassed. The existence of different types suggests three significant features of Himachal Pradesh forests:

(*i*) lack of unified control over forests although the Department manages a very large area;

(*ii*) the existence of a large area, 1,800 square miles, yet to be demarcated, without which rational development and exploitation become difficult; and

(*iii*) private forests, though only 10 per cent of the total area, hampering the operation of a unified policy.

Private Forests

5.8 The privately owned forests are exploited with the sole object of immediate gain, and are subjected to heavy grazing. Maximizing the income is the major objective. No effort is made to preserve and develop the natural gift, with the result that the forests are denuded of trees and are leading to heavy soil erosion. Perhaps the first issue in a developmental forest policy during 1961–71 would be whether the private forests could be left in private hands. The trend of policy on land reforms favours the taking over of private forests by the Administration. The Himachal Pradesh Administration has already enacted a Private Forest Act, whereby an attempt will be made to check the present unwise exploitation of these forests. The Act may be given a trial in the 1961–66 period and, if the present mismanagement is not checked, the Administration may consider the question of acquiring them. In the adjoining State of Punjab, the Punjab *Cho* Act has had a deterrent effect. A legislation on similar lines for this Territory would be desirable. The second step will be the formulation of coordinated regeneration-cum-exploitation programmes for reconditioning, particularly the mountainous regions and river valleys, by establishing protective forests over large areas, by preserving the existing resources and by exploiting them scientifically.

Forest Rights and Concessions

5.9 Even the departmentally managed reserved and protected forests are greatly burdened with rights and concessions, the most important of which is the defined right of grazing cattle. Such concessions are also found in the undemarcated, protected and unclassed forests, but they are less precisely defined.

Grazing Concessions

5.10 Grazing rights secured through forest settlements and customary in character are, no doubt, inevitable in a backward agricultural, livestock dominated economy, but in view of the repercussions on forest wealth, control and regulation should form an essential part of future forest policy. The grazing concessions relate to three types of graziers: the local graziers who are agriculturists and permanently settled in their villages and keep an excessive number of livestock grazing in the forests; the migratory graziers who belong to the high hills and move with their flocks of sheep and goats in search of seasonal pasture, their agricultural holdings being too small for any self-sufficient permanent settlement in the villages; and the nomadic graziers who come from outside the Territory and do the greatest damage to the forests. The incidence of grazing is indicated by the fact that 20 million or 71 per cent of the 28 million livestock exploit the forest forage, and of these, goats and sheep, which cause maximum destruction to forest wealth, number

nearly two-thirds. In terms of standardized grazing units this livestock population works out to 4·8 million which is more than double of what the grazing area can support.

Grazing Policy

5.11 By 1961 the grazing policy should be clearly defined and in the coming years should be rigorously enforced. The basic requirement of such a policy is to accept grazing as an inevitable fact, and to limit it to the essential cattle of the region. To improve the grazing possibility of the forest, continuous grazing should be prevented and rotational grazing should be attempted. Both regulation and public appeals to the villagers are necessary. Attempts will have to be made to reduce the reckless increase in the number of the cattle. Grazing in 'regeneration' areas and in young plantations with seedlings should be prevented. In protected forests grazing should be kept at a minimum and to make this practicable special fodder reserves should be created. In the Second Plan an area of 94 acres has so far been successfully sown with luscious grasses and fodder trees. In the Third and Fourth Plans the scheme may be continued and 4,000 and 6,000 acres respectively may be utilized for this purpose.

Misuse of Forests

5.12 Apart from grazing, other practices leading to forest misuse are firing, particularly in chir, kail and deodar forests, deliberately to get early crop of grass; illicit cutting of trees as in the Paonta valley; felling timber at concessional rates; and unregulated free domestic fuel which is estimated to supply three-fourths of the domestic heat requirements in the Territory. The case of medicinal herbs, in which the Territory abounds, is not different. By taking a licence costing a rupee the herb collector is free to follow his predatory search.

5.13 These rights and practices have placed different classes of forests at different stages of depredation and have endangered the integrity of forest property. As scientific conservation involves the regulation of rights and the restriction of the privileges of users, the future developmental policy should discover the means of meeting this complex problem, involving, as it does, socio-economic, legal and customary considerations. Apart from other complications, a hasty abolition of these concessions, without providing alternative occupations or sources of income would economically harm the individuals, suggesting gradualness in the withdrawal of the rights. During 1961–66 attention may be concentrated on preventing the firing of forests, though there has been no major fire since 1953; attempts may be made to prevent illicit cutting and the concessional sale rates of trees which were fixed before the war may be enhanced to prevent wasteful felling. An attempt should also be made to educate panchayats in the benefits of forest conservation.

Haphazard Exploitation

5.14 The exploitation of forest resources is very limited in volume and variety. The total stock of growing timber was estimated in 1954 at 3,138 million cu. ft. of the coniferous type and 272 million cu. ft. of the non-coniferous. Timber extraction, which is the main forest occupation, is carried on primarily by private contractors, and it employs 5,000 persons annually. The departmental extraction is found only in the Upper Bushahir division. Resin, however, is tapped

departmentally on a large scale, particularly in the chir forests, but employs a comparatively small number of persons. Apart from miscellaneous products such as firewood, charcoal and fodder, the main form of exploitation relates to timber utilization. This is dealt with in detail later, but mention may be made here of the important uses affecting the economic position of the forests—packing case units, five in number, situated in the fruit-growing region; battery separation at Dalhousie using silver fir from Kalatope forest; the paper industry at Yamunanagar utilizing grass and bamboo; and medicinal herbs, mostly exported outside the Territory.

5.15 Even with this limited and haphazard exploitation, the Himachal Pradesh forests have been good yielders as indicated below:

	Value
Major Produce	(Rs. Thousand)
Timber	1,632
Firewood	482
Charcoal	18
Round wood	14
Minor Products	
Fodder and grazing	1,137
Other grasses	26
Resin	2,858
Drugs	41
Bamboo	33

Soil Conservation and Training Programmes

5.16 Maintenance of the integrity of the forest, both reserved and unreserved, is a necessary major problem, but is expensive and of a long-range character. A detailed analysis of the problem has been made earlier. In addition to the actual conservation, the programme of development should include the establishment of a separate soil conservation wing in the Forest Department and the formulation of conservation and training programmes.

5.17 The conservation programme for 1961–71 would have to include: (i) A soil and land use survey and practices. The survey may extend to 150,000 acres in each of the two Plan periods. (ii) Demonstration centres are basic to the success of the programme, particularly in a backward region. Ten centres comprising about 1,000 acres each may be taken up in each of the Plan periods. (iii) A more comprehensive training programme is to be started. The existing soil conservation school at Mamul may be expanded. (iv) In the river valleys, afforestation of 7,000 to 8,000 acres and bench terracing of 5,000 to 6,000 acres in each of the Plans would be necessary for conservation in the river valley projects. (v) Also, soil conservation measures should be adopted in water-sheds for flood control in over 30,000 acres. (vi) Construction of percolation tanks and check dams are necessary.

Natural Regeneration

5.18 An equally essential element of the developmental programme is aiding the natural regeneration obtaining in the forests. The pace of regeneration should be accelerated so that

in 1961–66 about 50,000 acres would be taken up, and in 1966–71 this area should be doubled. The outlay may be of the order of Rs. 20 lakhs in the Third Plan and Rs. 50 lakhs in the Fourth Plan. A considerable section of undemarcated forests has deteriorated greatly on account of successive user rights. Their rehabilitation is immediately essential and practicable because the cost of rehabilitation may work out to about Rs. 160 per acre. About 5,000 acres may be rehabilitated in each of the next two Plans. As most of these forests are in the nature of village forests, the cooperation of the panchayats may be sought.

Economic Plantations

5.19 Another step that may be taken is the extension of economic plantations of conifers, mulberry, bhabhar, etc. Perhaps an area of 10,000 acres in 1961–66 and 15,000 acres in 1966–71 would be practicable. One difficulty to be faced in raising plantations outside the regular protected forests is of closures and protection.

Forest Utilization

5.20 Himachal Pradesh is very favourably placed regarding timber trees such as chir, kail, fir, deodar and spruce and broad-leaved species. The demarcated coniferous forest areas can, according to one estimate, yield about 41 million cubic feet. The timber is manually converted at stump site into railway sleepers and scantlings of various sizes, which can be easily transported by manual labour over short distances to *khuds* and rivers or heads of wire ropeway systems. Sawn sizes are dumped there into streams and rivers which take them to the collecting stations in the plains. Under the present condition it will not be possible to float logs as such down to the plains. Inaccessibility and difficulty of transport do not allow of exploitation of some of the potentially exploitable areas. Thus the primitive modes of communication and transport are the most difficult obstacles in the way of mechanization of logging and transport, and the resulting development of forest areas. The industries cannot afford to pay for raw material extracted by the current methods, as the extraction cost alone comes to Rs. 1·75 per cubic foot.

5.21 The main drawback of this process is the neglect of the engineering aspects of extraction, conversion and utilization. For example, conversion by sawing at stump site results in the non-availability of 70 per cent, 65 per cent, 55 per cent and 50 per cent of wood from fir, kail, chir and deodar respectively for other uses.

Extraction

5.22 The limitations lie at all levels and, particularly, in extraction, which in fact, is the nucleus of the forest utilization problem. There is a lack of proper roads for logging and hauling, of modern equipment and transport of trained crew also. Rivers fit for floating logs are not there. Extraction by private parties is under short-term contracts which discourage long-term investments. These conditions are almost peculiar to India. The consequences are deplorable. The usable waste forms a high proportion. Since the rivers are unsuited for floating, a further 10 to 20 per cent of the timber is lost during transit. The annual loss due to all these may be estimated at Rs. 3 crores. This enormous wastage can be avoided by improved extraction, conversion and transportation.

5.23 One step to reduce waste is to develop forest roads for transportation. As it is transport of high class timber by rivers appears technically not feasible. The Administration can undertake extraction and deliver the timber to the contractors as logs rather than sell the standing trees. At present the department is not organized to handle extraction, and, therefore, large outlay on staff, and on their training would become necessary. Alternatively, 15 to 30-year leases to private contractors may induce them to invest in road building and logging and transportation equipment. The Administration may also undertake operations jointly with the private entrepreneur and this would mean more investment on personnel and equipment. Finally, a programme of sustained yield should be followed. Increased extraction should be paralleled by increased reforestation.

Minor Forest Products

5.24 Effort should be made to develop minor forest products such as medicinal herbs and tannin-yielding plants. For long, little effort has been made to systematize collection. Only in the Second Plan has a beginning been made in this direction. In addition, both exploration and cultivation will also have to be taken up.

Trained Personnel

5.25 All these and other steps require professionally trained staff, of which there is a marked deficiency now. It would be necessary both to increase the number and to improve the training of the staff. The outlay on forest development and utilization in the Third Plan may not be more than Rs. 3·73 crores and in the Fourth Rs. 4 to 5 crores; even so, how much of it can be actually spent depends on the availability of trained personnel.

Policy of Optimum Returns

5.26 A policy of optimum returns involves attention to sustained yields so as to conserve the forest wealth in perpetuity. This would mean that the annual harvest of forest produce should equal the annual increment and that afforestation should be so planned as to replace inferior trees by commercially valuable species.

Integrated Wood Utilization

5.27 The optimum use of the forest resources means not only complete extraction and efficient conversion and distribution to markets, but also minimum of waste and maximum of utilization. This is achieved by an integrated wood utilization programme, which consists in coordinating the successive operations and utilizing the wastes of each operation. Current utilization in Himachal Pradesh lacks coordinated operation. Apart from the inadequacy of transport facilities already noted there is no specific method of seasoning either.

Allocation of Forest Resources

5.28 An important aspect of rational utilization is the equimarginal allocation of the forest resources among the different uses. The first step in this direction relates to the use of wood as fuel. The fuel demand in Himachal Pradesh is about 100,000 lbs. of wood per day, which it is difficult to meet. A portion of the wood now used for fuel could be utilized for more valuable purposes, if the heating efficiency of household stoves could be increased; only wood which is not useful for other purposes should serve as fuel. Some species of wood can serve a dual purpose for fibres and for structural material. Whenever possible they should be reserved for structural uses, for structural timber is the economic backbone of any system of integrated wood utilization. Secondly, concrete prestressed sleepers should replace wooden ones. Thirdly, wood should be best used as chemical raw material. This requires a high degree of technical skill and large capital, but it is worthwhile to make this outlay in 1961–71 and train the requisite personnel.

5.29 Improvements in extraction and conversion and a more efficient use of timber would increase Himachal Pradesh timber output as shown in the table below.

		1957–58 assuming conversion at 40 per cent (tons)	*Value Rs. 100 per ton* (Rs. crores)	*1964–65 assuming conversion at 80 per cent* (tons)	*Value Rs. 100 per ton* (Rs. crores)
(i)	Coniferous[a]	290,907	290·90	581,814	5·818
(ii)	Broad leaved[a]	9,486	9·48	18,972	0·190
(iii)	Coniferous[b]	..	..	290,907	2·909
(iv)	Broad leaved[b]	..	..	9,486	0·095

[a] 100 per cent increase in conversion.
[b] 50 per cent of sleepers diverted to high quality usage.

5.30 The problem of utilization in Himachal Pradesh is of such magnitude and the backwardness of the Territory so great that initiation, operation and achievement would necessarily take time. But a broad time phasing of the utilization programme over 1961–71 may be indicated.

5.31 It is initially essential to make a comprehensive survey of the forest resources, communications, labour supply and possible location of industries. This itself is time consuming and may well be done in 1961–66. Next, it is desirable to organize a development group to study, develop and implement extraction technique, mechanized logging, improved conversion practices and so on; but in view of the large expenditure involved—it is estimated to cost Rs. 90 lakhs in 1961–66 of which a sizable share is in foreign exchange — it is doubtful if the required funds can be found. It should be possible to have a reduced scheme of expenditure for the group in 1961–66 and then augment it in 1966–71 and later. This group would be a fairly independent unit, but within the framework of the Forest Department. A number of wood utilization industries are possible in 1961–71 and they have been detailed elsewhere (vide Chapter 11). The location of these industries requires further enquiry, but broadly two factors may be borne in mind:

Firstly, production facilities should be located as near the centre of forest areas as possible. Secondly, as adequate transport is the key to forest development and utilization, investigation of the forest road pattern is necessary from the standpoint of engineering, geology, hydrology, meteorology and economics.

Forest Roads

5.32 The latter is highly important. The absence of forest roads inhibits its permanent development. The Chamba valley is an instance. In this important forest area there is only one motorable road up to Chamba and that is so narrow that it can take only one-way traffic of light vehicles up to three tons capacity; and the Dalhousie to Chamba section is liable to damange for five to six months in the year. The current mileage of forest roads and paths is as under:

Circle	*Cart Roads* (miles)	*Bridle Paths* (miles)	*Inspection Paths 2'–3' wide* (miles)
Simla	1	419	..
Sirmur	19	519	217
Chamba	..	1,108	899
TOTAL	20	2,046	1,176

All these are unmetalled and their repairs spasmodic, depending on funds. The expenditure on forest roads and paths from 1956 to 60 is as follows:

Year	*New Construction* (Rs.)	*Maintenance* (Rs.)
1956–57	1,86,283	93,239
1957–58	4,03,672	1,05,513
1958–59	2,75,919	..
1959–60	2,69,094	..

A thousand miles of forest roads of all types should be constructed in each of the next two Plans, and the outlay required would be about Rs. 10·22 lakhs and Rs. 40 lakhs respectively. This cost would be heavier than at present due to difficulties of the terrain. The tendency to convert all bridle paths into wider roads may be avoided in future. Adequate network of roads with easy gradient and of about 8 feet width and usable by tractors and trailers, and feeder roads to different coupes should be developed. The long-run aim of forest roads should be to permit, in later years, the operation of fully mechanized equipment within the coupe; but as in 1961–66 such equipment may not be available, draught animals may have to be used on a considerable scale.

Revenue from Forests

5.33 The revenue receipts from the forests have steadily grown from Rs. 80·2 lakhs in 1954–55 to Rs. 141·5 lakhs in 1958–59 and the expenditure on these from Rs. 30·7 to Rs. 46·6 lakhs, yielding the Territory a surplus of Rs. 49·3 lakhs in 1954–55 and Rs. 94·9 lakhs four years later. In terms of area the gross income and expenditure per acre in Himachal Pradesh and elsewhere were as under:

State/Territory	*Per acre Gross Revenue* (Rs.)	*Per acre Expenditure* (Rs.)
Uttar Pradesh	5·2	2·5
Himachal Pradesh	3·3	1·4
Madras	2·4	1·2
Bombay	2·3	1·1
Madhya Pradesh	1·7	0·6

The comparative position with respect to the Territory's income derived from the forests in 1955–56 was as indicated below:

Share of forests in State/Territory income	*Per cent*
Himachal Pradesh	6·2
Punjab	0·2
Andhra Pradesh	0·2
Madras	0·2
All-India	0·7

Forest Development Policy

5.34 Thus, the important role of the forests in Himachal Pradesh economy, as well as the various problems associated with it will have to be considered in the formulation of a forest policy. Such a policy will have a developmental facet and a utilization one. Under the former head are half a dozen issues—maintenance of forest integrity, land use, the problem of river fringe plantations, forest regeneration, resource exploitation, forest roads, special problems of the Sutlej area and problems of management.

A Rational Forest Policy

5.35 A rational forest development policy, involving scientific exploitation, implies proper land use in terms of forest categories—reserved, undemarcated, unclassed, etc.,—an assessment of the available and potential resources, and an inquiry into the incidence of prevalent uneconomic uses as grazing and firing and, the scope for regeneration and for extending or restricting agricultural and other uses.

Other Measures

5.36 Other measures necessary in this connection are the development of economic plantations, scientific exploitation of fuel, forests and herbs, forest protection, improvement of pasture lands, and reconsideration of the grazing concessions. The outlay on these may be about Rs. 50 to 75 lakhs in 1961–66 and, an equal amount in 1966–71. River fringe plantations are an urgent need partly, as a part of the development programme, but largely to trap silt entering the drainage system of the country. Outlay on these would give a direct monetary return on the investment, if the right species yielding minor forest products are chosen for plantation. Although approximately two to four chain lengths of the fringe should be planted, an immediate survey to ascertain the acreage to be covered and the required outlay is called for.

First and Second Plan Programmes

5.37 The First and the Second Plans have attempted to meet some of the requirements of a progressive forest policy, but not on an adequate scale. The First Plan aimed at the demarcation of forests in Suket, Nahan and Rajgarh Forest division, soil conservation and afforestation, propagation of bhabhar grass in Sirmur district and the construction of roads, paths, bridges and buildings in the forest area at an outlay of Rs. 11·60 lakhs. By 1956, 3,588 square miles of forest area was under the forest management, a length of 258 miles of forest roads and paths was constructed against the Plan target of 1,149·5 miles. The plantation of bhabhar grass in 2,955 acres was completed against the target of 9,400 acres in Sirmur district.

5.38 The Second Plan has an outlay of Rs. 55·5 lakhs to continue some of the developmental schemes of the First Plan, e.g., cultivation of bhabhar grass and extension of forest roads, and also to have some new schemes like (forest) research on pastures and a soil conservation school. Survey work was done over an area of 323 square miles. No attention was, however, paid to the development of herbal industry in the First Plan, although the fee on collection permits and export licences yielded a considerable sum. The Second Plan aims at bringing 18 acres under scientific and proper cultivation of herbs at an outlay of Rs. 1·75 lakhs. The progress in this respect is very slow and the amount spent so far is Rs. 42,799. The progress is expected to be speeded up when the results of the present experimental planting are known, and some technically trained staff becomes available.

Increasing the Accessibility

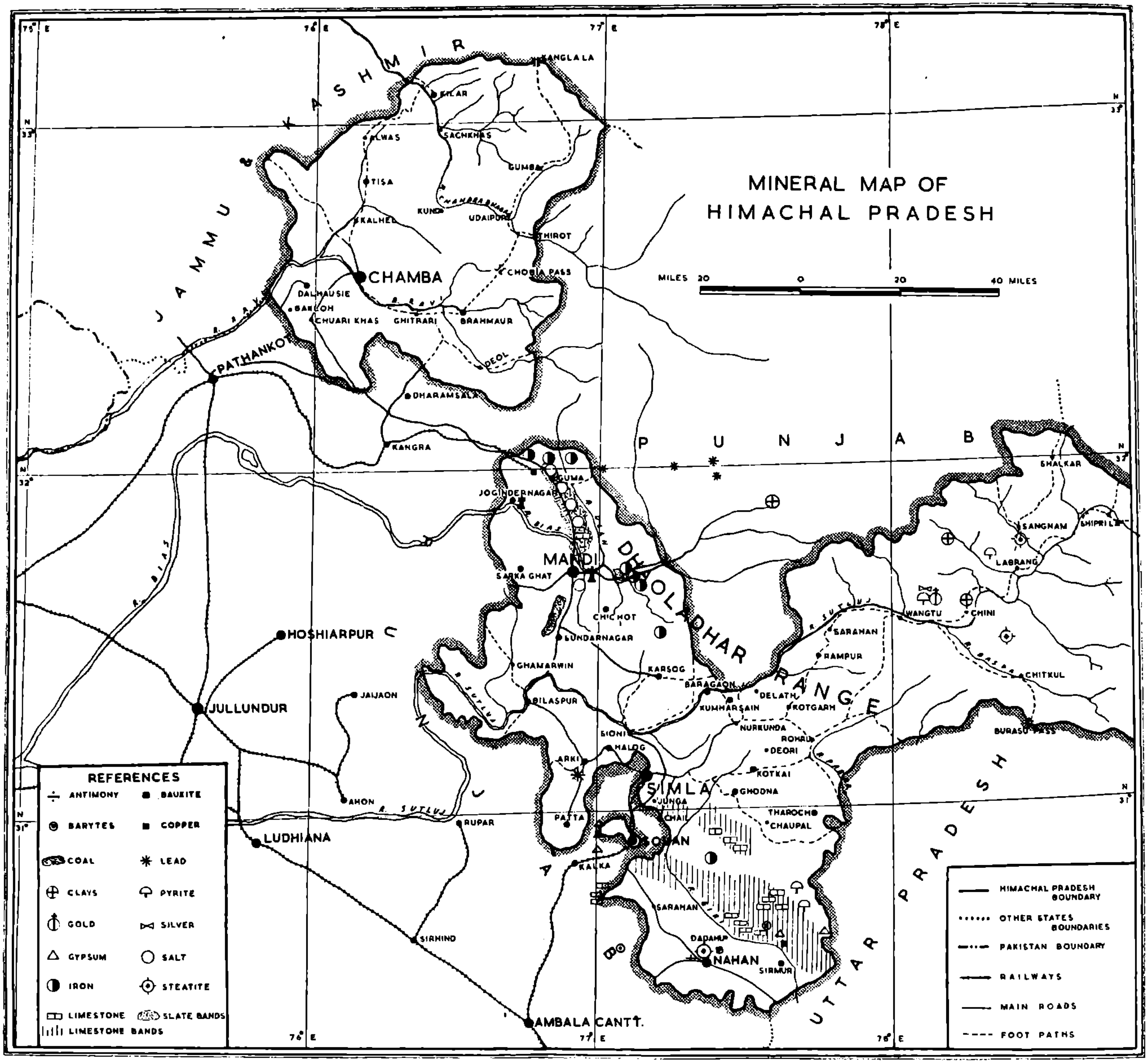
5.39 To overcome the handicap of inaccessibility of forest areas in the exploitation of their resources, 43 per cent of the outlay of Rs. 55·5 lakhs has been allocated to the construction of roads and buildings. Besides the construction of new roads, the programme includes linking of forest paths with P.W.D. motorable roads so as to serve as feeder lines. The total length of new roads thus planned in 1956–61 is 492 miles and the outlay Rs. 14·25 lakhs. In the First Plan 258 miles of roads were constructed and in the Second, 370 miles. Road construction is proposed to be extended in the Third Plan also. If extraction is improved and mechanized logging and transport introduced, a more rapid construction of roads is essential for better exploitation of the forest wealth. In the context of the magnitude and variety of the forest problems and the

potentialities of forest development in Himachal Pradesh, the efforts so far taken are inadequate. A far more concentrated attack on a much wider front is required.

5.40 In the next decade, the policy should aim at: (i) a very much larger outlay on development and on soil conservation in the Third than in the Second Plan, and to double the Third Plan outlay in the Fourth; also (ii) a more coordinated policy, spread over the decade and on a larger area.

Data for Future Use

5.41 One of the basic steps that should be taken is to collect data for formulation of a future development policy. A basin-wise resource inventory should be prepared and studies regarding rotation should be taken up. An intensive forest land use survey should be simultaneously commenced and detailed schemes of land allocation according to the most rational use should be formulated together with the phasing of the uses. Smaller and simultaneous surveys may be made in the river valleys and river fringe forests. As survey of this type may take about 15 to 20 years to be completed it had better be taken up as early as possible. Information, as and when collected, would help the next two Plans. The cost of such a survey needs further working out.


MINERAL MAP OF
HIMACHAL PRADESH
MILES 20 0 20 40 MILES
JAMMU & KASHMIR
PUNJAB
UTTAR PRADESH
DHOLADHAR RANGE
CHAMBA
DALHAUSIE
BAKLOH
CHUARI KHAS
GHITRARI
BRAHMAUR
DEOL
DHARAMSALA
KANGRA
PATHANKOT
KILAR
SACHKHAS
KILWAS
TISA
GUMBA
KUND
UDAIPUR
KALHEL
THIROT
CHOBIA PASS
KANGLA LA
JOGINDERNAGAR
GUMA
MANDI
SARKA GHAT
CHICHOT
SUNDARNAGAR
GHAMARWIN
BILASPUR
KARSOG
BARAGAON
KUMHARSAIN
DELATH
KOTGARH
NURKUNDA
ROHRU
DEORI
KOTKAI
GHODNA
SARAHAN
RAMPUR
WANGTU
CHINI
CHITKUL
BURASU PASS
LABRANG
SANGNAM
SHIPKI LA
SHALKAR
SIONI
HALOG
ARKI
SIMLA
JUNGA
CHAIL
PATTA
SOLAN
KALKA
THAROCH
CHAUPAL
SARAHAN
DADAHU
NAHAN
SIRMUR
HOSHIARPUR
JULLUNDUR
JAIJAON
AHON
LUDHIANA
RUPAR
SIRHIND
AMBALA CANTT.
R. RAVI
R. BIAS
R. SUTLUJ
R. CHANDRA BHAGA
REFERENCES
ANTIMONY
BAUXITE
BARYTES
COPPER
COAL
LEAD
CLAYS
PYRITE
GOLD
SILVER
GYPSUM
SALT
IRON
STEATITE
LIMESTONE
SLATE BANDS
LIMESTONE BANDS
HIMACHAL PRADESH BOUNDARY
OTHER STATES BOUNDARIES
PAKISTAN BOUNDARY
RAILWAYS
MAIN ROADS
FOOT PATHS
75° E
76° E
77° E
78° E
N 33°
N 32°
N 31°

Chapter 6

Minerals

The Resources

6·1 The overall position of Himachal Pradesh in the country's mineral map is insignificant. Its output is less than 0·2 per cent of India's output as compared with Bihar's 35·2 per cent, Bombay's 9·8 per cent and Assam's 1·3 per cent. In value terms, Himachal contributed in 1957 Rs. 3·48 lakhs worth out of the country's output of Rs. 127·2 crores. According to the preliminary investigation of the Geological Survey of India, the mineral occurrences in Himachal Pradesh are salt, gypsum, limestone, barytes, clays, mica, iron pyrites, slate and lead, but of these, salt and slate alone are of some significance.

6.2 The distribution of known mineral wealth is uneven among the districts and is highly concentrated in certain areas. In Mahasu and Sirmur, mining activities are not on any commercial scale, and little is known about the reserves and the quality of minerals.

6.3 Mandi accounts for 52 per cent of the total output of the two major minerals—salt and slate. The high degree of concentration of minerals in Mandi facilitates exploitation while the fact that only two minerals (salt and slate) are of any importance makes the task of planning, development and extension of markets easier, particularly in the initial stages. This suggests that in 1961–66 expansion and outlay may be largely confined to these two, while exploration may be directed to the other minerals.

6.4 Himachal, however, produces all the rock salt of the country and a sizable proportion of slate. Mandi deposits of rock salt, first reported in 1841, start from Megal and extend up to Guma. Mandi has the monopoly of rock salt in India. Rock salt is excavated in Drang and Guma salt mines, both in Jogindernagar tehsil. The reserves of rock salt are estimated at 2 to 2·5 million tons for the Drang salt mine and about a half million tons for the Guma mines.

Salt Mines

6.5 Except for a small quantity of pure rock salt, the salt found in the Territory is mixed with clay. Crystal salt has a wider market in the neighbouring States of Punjab and Jammu and Kashmir. Clay mixed salt is used by the poorer people as cattle feed. At present no industrial uses are being experimented with. Out of the total production of 130,000 maunds during the year 1958–59 about 30 per cent was exported, 55 per cent of it to Punjab and the balance to Jammu and Kashmir. With a monopoly of rock salt and with two neighbouring markets far removed from sources of sea salt, salt mining in Himachal has bright prospects provided, first, transportation of salt from the mine to the market is made more economic; second, mining is modernized, organized and made less wasteful; and third, new sources of salt are continuously explored.

6.6 There are considerable, though not estimated, deposits of roofing slate. The major quarries are in Mandi district and particularly in Dee about 15 miles from Mandi and Bakhli which is on the other side of the Deo quarry.

Slate

6.7 Slate mining is also concentrated in this district which has about 101 quarries situated in Sadar tehsil, Chachiot tehsil and in Jogindernagar tehsil. Chamba produces hardly six per cent of the total output, the only product being roofing slate. Most of the 52 quarries are owned by the Forest Department but worked by private contractors. There are no regular and large scale slate quarries.

6.8 The slate of Himachal Pradesh is useful only for roofing purposes within the Territory itself. An experiment to manufacture school slates proved uneconomic because of the colour and wavy nature of the cleavage planes. These limit the market for the products, both in area and variety. Efforts at expanding the slate quarries should, therefore, be directed towards making better and less expensive slate roof products to suit the local markets.

Limestone

6.9 Limestone is found extensively in Himachal Pradesh, of which particularly important are the Sataun deposits of the Sirmur district. The total resources of limestone in this region are estimated to be about 141 million tons. This quantity lends itself to large scale exploitation.

Gypsum

6.10 Himachal Pradesh gypsum is of low grade. The known deposits, about eight miles from Rajban, are estimated at about one million tons; the deposits at Bharli at 234,400 tons; and the potentiality at Shilorma and Richna not yet estimated. Transport facilities are backward, and with the known deposits no major industry is possible.

Barytes

6.11 Barytes of good quality are found in the interior hill ranges and in the Sirmur district. The economic possibilities of exploiting this mineral, which has a total reserve of about 13,000 tons, are handicapped by the inaccessibility and limited knowledge of the reserves. The deposits are too small for economic exploitation and are remote from any railhead. There is not even a regular road; and in addition, there is an unbridged river to be crossed. Before any exploitation is seriously considered, a thorough geo-economic investigation is essential to assess the total reserves, the extent, type and cost of transportation and the marketing possibilities. There is some scope for developing markets in India and perhaps outside as well. The survey may be taken in hand immediately to facilitate decisions during the Third Plan.

Alum Shales

6.12 Alum shales are found to some extent. There is no market for it in the Territory, but a limited one is found in the glass works of Punjab and the tanneries of Agra. No large scale exploitation appears possible.

Iron Ore

6.13 Mandi has deposits of iron ore, estimated at 60 million tons, but the lack of transport and fuel limits the opportunities of exploitation. If coal from Kashmir could be imported and roads extended and improved, it may be possible to have a small iron industry.

Iron Pyrites

6.14 For the exploitation of iron pyrites near Tara Devi a thirty-year lease was granted in 1937 to Dr. Kadar Nath by the late Keonthal Durbar. This lease was later on transferred by Dr. Kadar Nath to Messrs. Mining and Commercial Industries Ltd., Agra in 1942. The lessee worked the mines upto 1945 and since then it is closed because of a legal dispute.

6.15 There are a few other minerals such as bauxite and copper which have to be explored further.

Transport Problem

6.16 Except for salt, slate and limestone, the other minerals cannot, at present, be commercially exploited. Their quantity and quality of the deposits are so far unknown. Besides, these deposits are located in inaccessible and remote areas involving high transportation costs and incidental charges. Moreover, industries cannot be established on or near the mine-head as other components of manufacture are neither found in the vicinity nor can be made available at competitive prices. The establishment of any industry in these areas involves double transport cost for importing most of the components and for exporting the product to market centres, generally, outside the Territory. Thus overheads are too high for the profitable establishment of an industry near the mine-head.

6.17 It is true that the salt mines are not far away from the road head. The salt mines at Drang and Guma are only at a distance of one furlong from the Mandi-Pathankot road head and 24 miles and 7 miles respectively from the nearest railway station of Jogindernagar. Trucks are available in adequate number, except during the months of October to December, when most of the vehicles are diverted to carrying seed potatoes and apples. Thus, transport is not a problem in the marketing of salt. Nor is it a problem at present with slate, which because of the local market is transported by head loads and mules. But any expansion of output and market is difficult without better and more roads and vehicles. The market for salt can be expanded by producing salt by the Brine Chamber process and increasing output. This process was introduced in 1957–58, but is still limited in operation.

6.18 Commercial exploitation of gypsum and barytes may be further investigated into. No mineral-based industry except soda ash and lime burning can be suitably established. However, the prerequisite to any such programme will be the availability of better transport facilities.

Future Mineral Development

6.19 The extent of most of the mineral reserves is not known at present and detailed prospecting cannot be taken up on private account as it involves considerable capital and technical manpower. Even at this initial stage of analysis, the problem of mineral development points to two essential steps to be taken: the need for an intensive short-term mineral survey by the Administration and the development of economic and widespread transport network — roads and vehicles to reduce the overheads and to market the output. The exploration should be comprehensive. It should enquire into the geological nature of the occurrence, undertake chemical analyses of the finds, and assess the possibilities of commercial exploitation. A survey should be made of transport facilities available currently and what might be required for future development in the mineral area and also of the availability of cheap power so as to facilitate mechanization if necessary. These investigations should be conducted in the light of the possible industries that might be fostered in the Territory.

Administrative Reorganization

6.20 Also, there is need for streamlining the administrative set-up. Two departments, namely, the Industries Department and the Forest Department share the control and administration of mines and geology. The latter controls the slate quarries of Chamba district. This dual administration has tended to slow down investigations and, with it the development of the mineral wealth. Administrative delay and friction should be reduced either by greater coordination between the departments or better still by establishing, as in some other States, a separate Department of Mining and Geology to look after surveying and quantitative and qualitative analysis of the reserves. Not only is administrative unification necessary, but also is the coordination of the exploration and exploitation activities.

Input–Output in Mining

6.21 Data regarding outlay are not fully available, but the amount invested seems to be small. Fixed assets in the salt mines were worth about Rs. 12,000 in 1958–59 and the output of salt was 5,015 tons. Slate quarries worked by private owners do not employ much fixed capital. Due to the seasonal character of labour supply, output from mines fluctuates. There is no labour specifically employed in mines. Labour is seasonal and available only in the slack season for agriculture, while during the rains the quarries are not worked. The number of workers is negligible; the number in the salt mines is about 125 of whom 15 are skilled. Unskilled labour is recruited locally and the technical personnel is imported from the neighbouring States. Three factors have influenced the pattern of employment — the small quantity of output, the backward techniques of production and the haphazard manner of quarrying by different private parties.

Any plan for development of these minerals during 1961–71 should tackle these triple problems — quantity, technique and organization.

Mineral Policy, 1961–71

6.22 To sum up, the mineral policy for Himachal Pradesh should comprise the following programmes:

(*i*) Not much is known about the quality and quantity of the many reported mineral occurrences. However, since the occurrences are in favourable geologic formations, the mineralized zones could be substantial.

(*ii*) Exploration should be taken up in 1961–66 to assess the quality and reserves of the mineral occurrences, particularly with reference to (*a*) clays for pottery in Mahasu, Mandi, and Sirmur, (*b*) salt for the chemical industry in Jogindernagar, (*c*) barytes for the paint industry in Sirmur, and (*d*) copper and lead occurrences in the Mahasu and Sirmur districts.

(*iii*) Gypsum and limestone are other minerals with economic possibilities, particularly for a cement industry. However, at present, a cement unit is not economic due primarily to the absence of rail facilities.

(*iv*) Among the known exploited deposits, slate is plentiful but its quality is poor and utilization is limited to roofing slates in the local hilly areas. While improvement in quarrying and mine transport would reduce the cost, the quality of the slate could not be changed. Extension of the market areas will be dependent on a reduction in mining costs.

(*v*) Rock salt is being mined in the Mandi district and could be used after purification, both for domestic use and as a raw material for the chemical industry. Market expansion is dependent on reductions in the production costs through improved techniques and diversification of uses.

(*vi*) Inadequate road and rail facilities will create the major bottleneck for utilizing many of the potential mineral resources which may be discovered by further exploration. Hence, immediate attention should be given to the extension and improvement of transport facilities in these areas.

Chapter 7

Power

Domestic Consumption

7.1 In spite of a large hydel potential, Himachal Pradesh is backward in both power consumption and generation. By 1947 only six towns had been electrified in the Territory.

7.2 Generally power development goes hand in hand with setting up of industrial enterprises which, in turn, is dependent upon good means of communication. Power development has been slow in Himachal Pradesh due to difficult terrain, lack of communications and transport facilities and the almost complete neglect of industrial development in the past. Systematic development of power resources was undertaken for the first time in the First Plan period.

Per Capita Consumption

7.3 The per capita consumption of power in Himachal in 1951 was 0·7 kWh. By 1958, the per capita figure had risen to 1·5 kWh. Compared to 1951, consumption was 46 per cent more in 1956 and 115 per cent more in 1958–59 (Table 16). In quantitative terms, it went up from 818,000 kWh to 1,757,000 kWh during 1951 to 1959. The per capita power consumption of 1·5 kWh in Himachal Pradesh is quite low compared to 32·2 kWh in all-India and 9·19 kWh in Jammu and Kashmir. Undoubtedly a great leeway in consumption has to be made up, and there is vast scope for expansion besides. The trend is undoubtedly towards a steady rise in consumption.

7.4 This power consumption, although not significant per capita or in the aggregate, is nevertheless more than the power generated in the Territory. Thus, on the eve of the First Plan, the total power consumed was about double the power generated in the State, while in 1958–59, out of 1,757,000 kWh consumed only 806,000 kWh was locally produced. The gap between demand and generation is both wide and widening and the Second Plan does not provide for balancing the two.

Pattern of Consumption

7.5 The pattern of consumption of power is suggestive of the possible direction of demand in the years to come. Power is consumed for the following purposes: (*i*) domestic, (*ii*) commercial, (*iii*) industrial, (*iv*) public lighting and (*v*) public waterworks and sewage pumping.

Domestic Consumption

7.6 Till 1950, power was largely used for domestic purposes and only a little for industrial and commercial purposes and for public lighting. Since then the percentage of domestic consumption declined in spite of the fact that the domestic connections increased from 1,850 to 7,800.

More small industries came up, and commercial activities increased thanks to construction of new roads.

7.7 Domestic consumption in 1951 which was 475,000 kWh accounted for 58·1 per cent of the total. By 1954, it had apparently decreased to 371,000 kWh or 37·6 per cent of the total (Table 17).[1] Consumption began to rise gradually from 1954 until by 1958–59 it was 621,000 kWh, although this was only 35·3 per cent of the total power consumed. Although the proportion of power consumed for domestic purposes is decreasing, the volume in absolute terms has been increasing. This tendency is expected to continue, as the rural electrification programme gets into stride; and with it problems relating to transmission, distribution and tariff rates will assume importance. Electric power can, however, be economical provided Punjab supplies power at grid rates and not at bulk supply rates.

Commercial Consumption

7.8 The commercial consumption of power (Table 17) in 1951 was 152,000 kWh or 18·6 per cent of the total consumed. Consumption in absolute terms has been continuously increasing and from 1954 even the relative share in total power consumed has been moving up, accounting for 524,000 kWh or 29·8 per cent of the total power consumed in 1958–59. This tendency, natural in a developing economy, may be expected to be more marked in 1961–71, and adequate provision should be made for it.

Industrial Consumption

7.9 What is more striking and meaningful to developmental planning is the trend of energy consumption (Table 17) for industrial purposes. In 1951, only 100,000 kWh or 12·2 per cent of the total was consumed by industry, but from 1954 industrial consumption shot up absolutely and relatively. It was 308,000 kWh (or 25·9 per cent) in 1956. This is accounted for by the emphasis on development of industries since the latter half of the First Plan period. This emphasis will be marked in the next decade. With the growth of cottage and small industries using power, industrial uses of electricity will shoot up even more markedly. Power availability and development of industries should be integrated both in volume and by regions, sometimes one and sometimes the other leading. This calls for a balanced outlay on the two, both quantitatively and over time.

Public Lighting

7.10 Comparatively, power consumed for public lighting is not of great significance. In 1951, 89,000 kWh or 10·9 per cent of the total consumption was for this purpose and it stood at 144,000 kWh in 1957–58. Although consumption in 1958–59 was about two and a half times more than that in 1951, it is only 12·4 per cent of the total.

[1] This decrease might have been due to the reclassification of some of the consumers into the commercial category.

Waterworks and Sewage Pumping

7.11 The Pradesh did not consume much power for water pumping and similar purposes (Table 17). With greater stress on water supply in the Second Plan, consumption increased in 1958–59 to 50,000 kWh. For the future a rapid growth in demand may be expected.

Problems of Power Development

7.12 On the eve of the First Plan the total power generated was 359 kW. In 1956, the power stations of public electric utilities had a total installed capacity of 494 kW and the generation plant installed by private industries amounted to 161 kW, which was 24 per cent of the total installed capacity in the Territory. In addition to the total installed capacity, the Territory had the option of utilizing upto 1,250 kW at Mandi from the Uhl river system. The actual demand, however, was of the order of 200 kW. In spite of the Territory's considerable water resources from snowfed streams, only 47 per cent of the total installed capacity was water-based. The rest, 53 per cent is oil-based (Table 19). The oil-based source has been preponderating largely because of the small volume of power required in individual power stations. This raises the problem of the type of power generation best suited to the economic needs of the Territory. At present, power supply is available at seven points in the Territory from the Bhakra-Nangal-Uhl river transmission-lines, and this comprises the largest potential source of supply.

7.13 The trend of power output has been upward since the year 1948 except for a drop in 1958–59 when Nahan stopped generation and switched over to buying power from Punjab. Classified by prime movers (Table 20), the total power output in the Pradesh in 1957–58 was 55.3 per cent by diesel and 44·7 per cent by hydel, whereas, in 1951 it was 37.9 per cent by diesel and 62·1 per cent by hydel.

7.14 The relative desirability of diesel and hydel stations, in the context of local conditions, will have to be considered, as also whether it may be economical to install local micro hydel sets or micro diesel sets in the inaccessible areas to facilitate the growth of small and cottage industries. In some of the locations in the lower valleys, where neither hydro electric stations nor bulk supplies are feasible, it may be economical to install diesel power stations, provided transport costs for diesel fuel are not prohibitive. The relative costs may, however, be studied in detail.

Power Development in the Plans

7.15 The First Plan provided for five small hydel stations in the upper valley and one extension from the Uhl river system in Punjab. The progress of these schemes has been slow and only one scheme, namely, the extension from Mandi to Sundernagar has been so far completed; so that, at the end of the First Plan the installed capacity from both hydel and diesel sets was only 520 kW in addition to 230 kW purchased from Punjab.

7.16 Expansion is planned to be more rapid under the Second Plan, for it aims at setting up industries, big and small, for which raw material and other resources are available. For this purpose Rs. 213·75 lakhs forming 14·5 per cent of the total Plan outlay has been provided for generating 3,100 kW. This is in addition to 2,200 kW of power proposed to be purchased from

Punjab. An increase in the industrial load from 300 HP at the end of the First Plan to nearly 6,000 HP by 1960–61 is also envisaged in the Plan. Electrification of 500 villages and tehsils has also been provided for; and 207 towns and villages including hamlets had been electrified by the end of March, 1959, excluding the 20 villages electrified during the First Plan.

7.17 During 1956–59 the capacity of the Solan power station was increased from 136 kW to 326 kW, and the power supply for half the town was converted to A.C. At Chamba the installed capacity of the three hydro sets (170 kW) was augmented to 200 kW and was converted to A.C. supply. In 1959 the total installed capacity was as follows:

	Diesel (kW)	*Hydro* (kW)	*Total* (kW)
Solan	326	..	326
Jubbal	..	50	50
Chamba	..	200	200
Theog	225	..	225
Rampur	45	..	45
	596	250	846

Power Requirements

7.18 It would be useful here to assess the long- and short-run power requirements of the Territory. This in turn involves a long-range view of the pattern of growth of the economy. The Territory's resources suggest that there is limited scope for large industries. Most of the small and cottage industries to be started in the Territory will have to be spread out according to the distribution of the population. Power supply has a social service aspect, but it has to be considered in relation to many alternatives; whether there should be more of roads, schools, hospitals, etc., as against the supply of electricity. It would have to be considered whether economic betterment could be achieved quickly through the supply of electricity or by meeting some other important needs. Long-run and short-run objectives should not be confused. Besides, there are two techno-economic issues. The phasing of power development can be done (i) through having a wide network of transmission lines to be linked up with Uhl and Bhakra systems or (ii) by setting up a number of micro plants. The determining factors will be the relative cost in these small units and on the purchase price plus transmission costs. Besides the regional factor, the case of certain far removed isolated areas is a class by itself. In what follows an analysis has been made of the power requirements of Himachal in the light of these considerations.

7.19 The pattern of Himachal Pradesh economy being essentially rural — much more than in other parts of the country — power utilization like economic development would, certainly in the next decade and probably in the succeeding one, be mainly in rural areas and for cottage and small industries. The scope for large and medium industries is relatively limited.

Power for Cottage Industries

7.20 The problems would be: (i) how far should cottage industries supplement agriculture, or be full time independent occupations; (ii) should they, though very small in size, be

power-using or labour-intensive; (iii) should they be spread over the Territory or be concentrated only where power is available.

7.21 There is a possibility of some development in the sphere of medium and large industries and, therefore, of demand for power from heavy industries such as soda ash and wood pulp in 1961–75. Apart from these, however, the demand for power comes from the smaller industries to which power supplies must be largely oriented.

Additional Demand

7.22 The development of mineral resources, the cement plant at Sirmur, the possible establishment of some chemical and metal based industries, the establishment of numerous small and cottage industries and the spread of rural electrification—all these would create additional demand for power. According to the preliminary forecast by the Central Water and Power Commission, the maximum demand in the next decade would be possibly as indicated below:

MAXIMUM DEMAND IN KW

Particulars	*Actuals*		*Estimated*	
	1955–56	*1960–61*	*1965–66*	*1970–71*
General lighting	408	2,060	3,950	5,791
Street lighting	45	144	225	311
Water works	36	202	297	429
Industries	398	3,970	8,890	18,331
Irrigation	nil	499	1,026	1,568
Others	6	9	14	24
AGGREGATE	891	5,099	10,965	21,429

SOURCE: Central Water and Power Commission.

NOTE: Although the development of loads and particularly industrial loads visualized above has not materialized, it is felt that taking into consideration the industrial possibilities indicated in the report and the fact that industrial estates are being planned, the targets of approximately 11,000 kW in 1956 and 21,500 kW in 1970 may be retained for the purpose of planning.

7.23 The total demand for power is likely to be very large by the end of the Third and Fourth Plans. The larger portion of the demand will come from industries all through the coming years.

7.24 The fact that the Territory has considerable hydel potential — which is still to be explored fully — may tempt hasty investment on generation schemes. As it is, it is more economical to purchase power from bulk generating sources developed within the Territory by Punjab as the already known potential of three million kW from the Sutlej basins can meet the demand of the entire region for a long time to come.

Power from Gas

7.25 There is little scope for generating power from gas. Coal deposits do not appear to be plentiful and the coal base for generation is not economic. Power, now generated, is either

hydel or diesel. Diesel oil is imported and oil generated power is expensive because of the initial cost of oil and of the cost of transporting it. But in locations at which hydro-electric power cannot be generated at economical cost and to which the cost of transmitting power from the nearest hydro-electric station may be prohibitive, use of diesel driven generators may be considered. Here again the cost of generation would be affected by the cost of transport. In areas of upper valleys which are not accessible to motor traffic, midget hydel sets might be preferable.

Development Policy, 1961–71

7.26 While centralized production may be economic at the productive centres, its transmission over uninhabited areas would add considerably to the cost of power at the consumer end. An alternative, being experimented with at Chhaila, is to group small contiguous villages to be supplied by small hydel sets worked from the flow of water in local streams. The result — technical and economic — of this experiment should be awaited with interest, but it may not be advisable to invest on small schemes in haste.

7.27 Although the broad pattern would be the same, the decade 1961–71 may be viewed in two parts. Each will need emphasis and urgent execution in some special way:

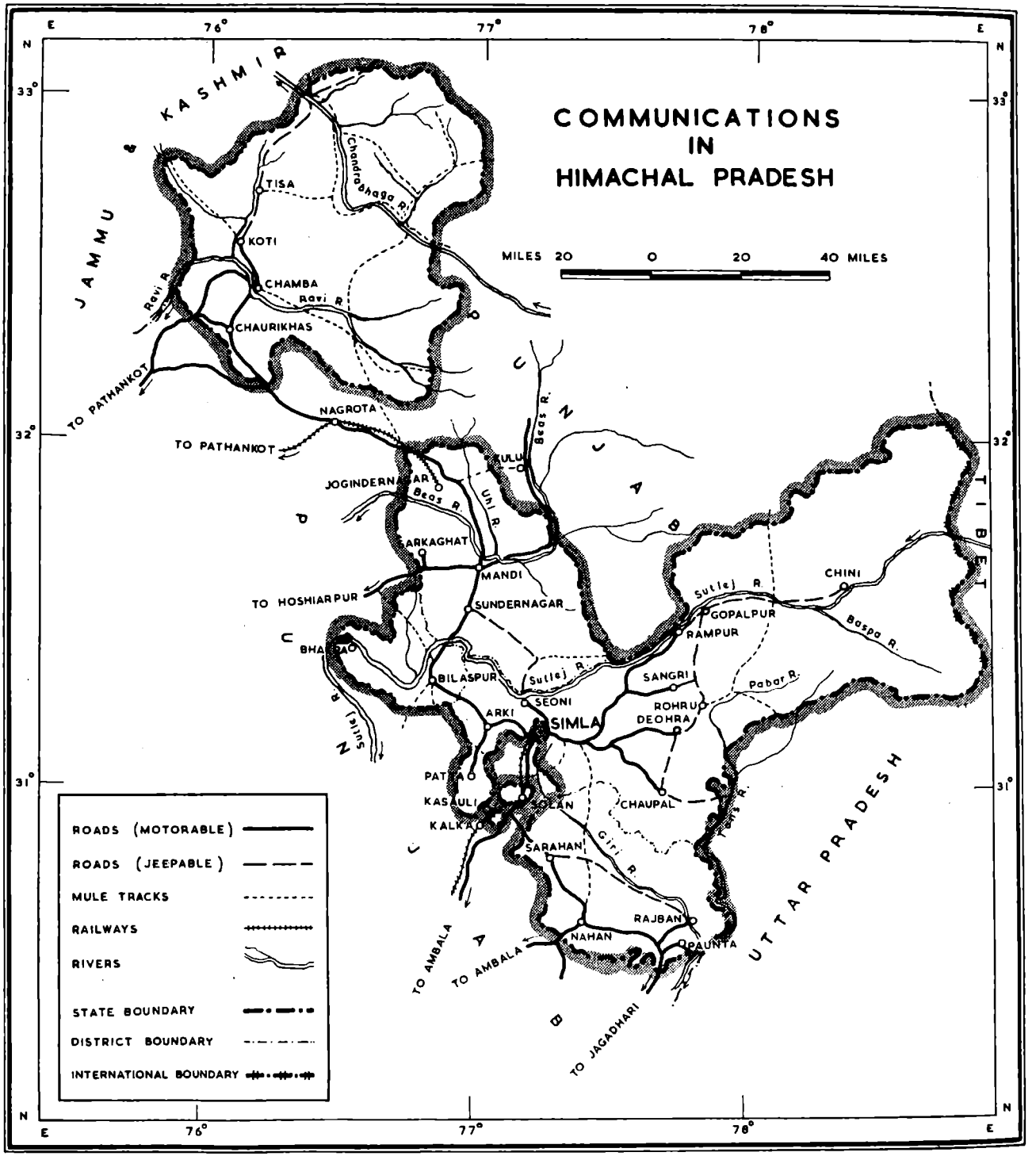
(*i*) The bulk of power required for the Territory will have to be purchased from the Uhl river — Bhakra-Nangal power system. A target of 15,000 kW of bulk supply by 1965-66 is considered adequate.

(*ii*) Bulk supply is available to the Territory from the Bhakra-Nangal system at seven points. An intensive effort will be necessary to promote the growth of industry in areas within economic reach of electricity. Transmission from these centres and the extension of power facilities to keep pace with the growth of power demands are matters deserving first priority. Resources should be concentrated on transmission and distribution over the next decade.

(*iii*) Detailed studies of hydrology and topography are essential to determine sites at which generation of hydro-electric power is economically feasible; these studies should be followed by the preparation of detailed projects with designs and estimates of cost to enable the Administration to approve them and to sanction the construction at the appropriate time. In such studies priority should be given to sites located in areas which are outside the economic reach of transmission from the existing sources of generation.

(*iv*) Small hydro-electric stations will have to be set up to serve isolated localities.

(*v*) While extending electric power supplies to rural localities, promotional aids to artisans to assist them in the purchase of machinery and equipment, as also in their installation and servicing, would help optimum utilization of power for productive purposes.


COMMUNICATIONS
IN
HIMACHAL PRADESH
MILES 20 0 20 40 MILES
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KASHMIR
JAMMU
PUNJAB
TIBET
UTTAR PRADESH
TISA
KOTI
CHAMBA
CHAURIKHAS
NAGROTA
TO PATHANKOT
TO PATHANKOT
Chandrabhaga R.
Ravi R.
Ravi R.
Beas R.
Uni R.
Beas R.
KULU
JOGINDERNAGAR
ARKAGHAT
MANDI
SUNDERNAGAR
TO HOSHIARPUR
BILASPUR
Sutlej R.
SEONI
ARKI
SIMLA
Sutlej R.
SANGRI
Pabar R.
ROHRU
DEOHRA
CHINI
Sutlej R.
GOPALPUR
RAMPUR
Baspa R.
PATTAO
KASAULI
KALKA
CHAUPAL
SARAHAN
Giri R.
Yamuna R.
RAJBAN
NAHAN
PAONTA
TO AMBALA
TO AMBALA
TO JAGADHARI
ROADS (MOTORABLE)
ROADS (JEEPABLE)
MULE TRACKS
RAILWAYS
RIVERS
STATE BOUNDARY
DISTRICT BOUNDARY
INTERNATIONAL BOUNDARY

Chapter 8

Transport

Special Features of Himachal Transport

8.1 Adequate, efficient and economical transport is the key to economic development, particularly in isolated hilly regions. Increasing food production, extending horticulture, growing cash crops or setting up of industrial units cannot succeed unless the means of communication are simultaneously developed, so as to bring the remote areas into touch with the marketing centres. The peculiar Himachal terrain which has isolated the economy, on the one hand, demands the rapid extension of roads and communications; but, on the other hand, limits the pace of extension by making road construction and transport operation expensive, difficult and uneconomic by the usual standards applicable to the plains.

8.2 Himachal Pradesh is not compact as a territory nor are its villages compact as in Punjab or in Uttar Pradesh. The villages are just a cluster of a few dwellings with considerable distances between one village and another over the hilly ranges. Inter-linking them and providing for the exchange of goods and ideas between them and the outside world are basic to their economic development and this can be achieved only through a network of roads. Besides, there are considerable inaccessible and backward areas, where the entire development would depend upon their being opened up to the outside world.

Rail Route

8.3 The Territory is at present connected with Punjab by two rail tracks, namely, the Kalka-Simla and the Pathankot-Jogindernagar lines. The total railway route mileage within a territory of about 11,524 square miles is only 34 miles. The narrow gauge Kalka-Simla Railway passes through the Territory for about 20 miles. The Pathankot-Jogindernagar line in the west connects the Pradesh with Punjab. Only the plains and valleys adjoining Punjab have possibilities for railway construction and one of these is the proposed Jagadhri-Rajban line. Sirmur is industrially important and is closest to the outside market, and the proposed railway line from Jagadhri to Rajban will bring it closer still.

8.4 Mandi which has both mineral wealth and small scale industries is fortunate to have an outlet by rail at Jogindernagar. Though in the coming decade the district is likely to assume importance industrially; in 1950–59 it accounted for only 16 per cent of the total road mileage in the Territory including 57 per cent mileage as in the Second Plan period. By 1959, this district had only 137 miles of road and a road mileage of 0·347 per square mile.

Inland Waterways

8.5 Inland waterways have little scope because of the terrain. Three major rivers, the Sutlej, the Beas and the Ravi pass through the Territory, but cannot serve as means of conveyance

except to a limited extent for floating timber. Nor are the rivers, flowing in hilly areas and deep valleys and shallow in winter and in spate in summer, usable as internal waterways. Their main value lies, in their potential, for hydro-electric generation. Possibly with the Gobindsagar Dam completed in Bilaspur district, limited waterways may be available. Those limitations are highly meaningful in highlighting roads as the only medium of movement and development.

Roads

8.6 Roads in Himachal are of four types. Primary, secondary, and tertiary roads are looked after by the Public Works Department. The Territorial Council is looking after some secondary and tertiary roads besides the quarternary roads. The primary roads link up district towns, and the secondary ones connect other towns and the tehsil headquarters with primary roads. Tertiary ones are jeepable and are primarily meant to connect the tehsil headquarters with the sub-tehsils and also the primary and secondary road systems. The quarternary roads comprise traces and mule tracks. Apart from these, there is a National Highway — the Hindustan-Tibet Road — which passes through the Mahasu district. There are also some forest roads maintained by the Forest Department. Primary roads are meant for high intensity vehicular traffic of heavy trucks and buses and secondary ones of lighter traffic; and tertiary roads as link roads with still lower intensity of traffic. Although traffic intensity in the Territory is not high as compared to the plains and would not be very high in the next quinquennium, it is desirable to base road policy, at least as far as the motorable roads are concerned, on the expectation of growing intensity.

8.7 Prior to 1940, there were no through roads in the area, and all the existing ones were stretches of isolated roads constructed to poor specifications by the then 'Hills States'. At the time of its inauguration in 1949, Himachal Pradesh had only 39 miles of good motorable roads and 180 miles of *kaccha* motorable ones.

8.8 Although on the score of road mileage in terms of population, Himachal Pradesh appears to be much better off than the all-India average, yet 103 out of 144 miles are non-motorable. This gives a motorable road mileage of 41 miles for every hundred thousand people, which is about half of the all-India average.

8.9 In absolute terms Mahasu accounts for the largest road mileage, 35 per cent, a third of which is motorable. But the road mileage is 0·152 per square mile. More than half of the district is inaccessible and snow-covered. There has, however, been an increase of 82 per cent of road mileage since 1955-56.

8.10 In 1958–59 Sirmur had 15 per cent of the total mileage and about one-sixth of the motorable roads in Himachal Pradesh. Since 1956 there has been a doubling of the mileage. Chamba (Tables 25 and 26), rich in forest wealth and requiring roads for developing the forests, claims above 26 per cent of total road mileage and 18.30 per cent of all motorable roads. Although since 1956 the main stress has been on the construction of motorable roads and opening up of the interior, the district is poorest with 0.052 mile of motorable roads per square mile.

8.11 In 1958–59 Bilaspur (Tables 25 and 26) had 8 per cent or 433 miles of roads and of these motorable roads accounted for only 31 per cent which formed 14·73 per cent of the Territory's motorable mileage. Since 1956 the motorable mileage has been doubled. Its road mileage works out to 0·961 per square mile.

Forest Roads

8.12 Forest roads have no specifications as such being unmetalled and of mud and are constructed either as roads or bridle paths or inspection paths. The share of forest roads in the three forest circles of Himachal Pradesh is as follows:

LENGTH OF FOREST ROADS AND PATHS IN EACH CIRCLE
(Square miles)

Forest circle	*Total area*	*Cart roads*	*Bridle paths*	*Inspection paths*	*Total*
Simla	850	1	419	..	420
Sirmur	947	19	519	277	815
Chamba	1,821	..	1,108	899	2,007
TOTAL	3,618	20	2,046	1,176	3,242

The overall road position excluding forest roads was as under:

	(Miles)	
	1955–56	*1958–59*
Motorable roads	446	722
Jeepable	435	455
Others	730	1,041
Total road mileage	1,611	2,218
Road mileage (per 100 square miles)	13·9	22·18
Road mileage per capita[a]	0·00144	0·00198

[a] Population estimated by C.S.O. for 1955–56 and 1958–59 is 1·12 million and 1·14 million respectively.

ROAD MILEAGE COMPARISON (1955)

	Per 100 *sq. miles*	*Per* 100,000 *people*
Himachal Pradesh	13·98	144·0
Manipur	5·52	82·3
Assam	11·53	78·9
India	261·00	82·0

Achievements during First Plan

8.13 During the First Plan, the total outlay on road development was Rs. 233 lakhs or 41.6 per cent, of which 96 per cent was actually spent. The physical target was 1,611 miles of roads. Of these improvements accounted for 255 miles of the existing motorable roads which were so far ill maintained. The road development programme shared the opening up of inaccessible and backward areas, improvement and reorientation of the existing roads to meet the changed administrative requirements and economic development of the area and linking of

district headquarters and other important towns with Simla and Jogindernagar. Seven hundred and ninety miles of jeepable and motorable roads were either constructed or improved, besides the 200 miles of the Hindustan-Tibet road undertaken as part of the National Highways construction programme.

Financial Allocation under Second Plan

8.14 The financial allocation for roads other than National Highways under the Second Plan is Rs. 427·50 lakhs as under:

Category and area	*Mileage*	*Phasing of expenditure during the Second Plan* (Rs. lakhs)					*Total*
		1956–57	1957–58	1958–59	1959–60	1960–61	1956–61
Roads other than National Highways	1,786	73·20	89·30	87·40	65·50	64·60	380·00
Roads in Backward and Scheduled areas	414	8·74	12·63	12·63	6·75	6·75	47·50
GRAND TOTAL	2,200	81·94	101·93	100·03	72·25	71·35	427·50

8.15 For the purpose of road construction, the Pradesh is divided into two sectors, the Backward Scheduled area and the rest of the Territory. The backward areas are Pangi and Lahaul in Chamba, the Chini and Baspa Valleys in Mahasu comprising an area of nearly 4,000 square miles or 40 per cent of the Territory. As a first step to provide the minimum of road facilities, 414 miles of roads were proposed during the Second Plan, and these were to be widened to nine feet wide roads on motorable alignments. The aim is gradually to build 4,700 miles of track in the whole Territory.

Progress during First and Second Plan Periods

8.16 No primary roads were constructed during the First Plan period, but 446 miles of secondary ones were completed. This also included 219 miles of roads which were there at the time Himachal Pradesh was inaugurated in 1949. By the end of the First Plan there were 435 miles of jeepable roads. Thus, by 1956, secondary, tertiary and quarternary roads accounted for 2,827, or 45 per cent respectively of the total mileage (Table 21). Out of the total road mileage of 1,611 seven per cent were National Highways, 18 per cent district roads and the rest, 75 per cent, were State Highways (Table 23).

8.17 In the first three years of the Second Plan 206·5 miles of primary roads, 275·5 miles of secondary ones, 288 miles of jeepable ones and 549 miles of quarternary roads were constructed bringing the total road mileage to 2,218 miles, an increase of 38 per cent over 1956 (Table 22). Regional distribution of this growth was a little uneven, probably because roads are related to

differing areas and because of the differing needs of the districts. For example, the increase was 220 miles in Mahasu and 115 miles in Bilaspur.

8.18 The construction of 2,200 miles of roads other than National Highways was aimed at during 1956–61. Gradual development of the main motorable roads into all-weather roads was also kept in view. Since 1958–59, the initial allocational objective, the distinction between the Backward and other areas, has been avoided by the Administration. The stress has been less on tribal areas because there was little pressure from the tribals for the construction of the roads. The Administration at present is guided by the return on the outlay and the scope for tapping known resources. During the first three years of the Second Plan period, between 50 and 60 per cent of the Plan targets for different kinds of roads have been achieved.

8.19 Till 1958–59 only six miles of roads were metalled and tarred. In view of the limited resources of personnel, apart from finance, the problem is one of choice between large scale extension on the one hand and improvement of roads on the other. A balanced policy which will give simultaneous attention to both is essential. To alternate between construction and improvement in successive Plans appears undesirable. A broad application of this approach in 1961–71 is suggested later.

Bridges and Culverts

8.20 An important link for making roads effective is the provision of bridges and culverts, whose importance is marked in hilly areas. The total number of bridges completed so far in Himachal Pradesh are eight, two in the First Plan and six in the Second. Six of these are on primary roads and two on a secondary road. Six more bridges are expected to be completed by the end of the Second Plan. The apparently simple problem of bridges is of considerable importance to Himachal, partly because the terrain requires more bridges and culverts per road mile and partly because the cost of construction is high in this region.

8.21 In breaking up the isolation of the hilly areas, and in a way of the whole Territory itself, roads will have to play a major role. But any extension of the road system and even improvements of the existing ones have to face some basic difficulties, physical and economic. Very largely, roads will have to be constructed and maintained in a highly mountainous region, with steep gradients, deep valleys and dangerous gorges. Bridges and culverts will have to undergo many repairs and maintenance will have to be heavy, because of washouts and land-slides, and the road mileage between any two points, being necessarily circuitous, vary much, and is estimated at being 100 per cent more than in the plains.

Availability of Resources and Labour Supply

8.22 The technical aspect with economic implications may be examined here. Compared to other Union Territories, Himachal Pradesh faces fewer difficulties in getting technical personnel who come from local and Central cadres. The real hurdle is the dearth of unskilled labour. The terrain demands a larger proportion of workers in road construction than would be normally required in the plains. The available local labour is highly migratory and seasonal. During winter, people move to lower altitudes for employment and return as soon as winter is over. Where labour

is imported, for example, from Tibet and Punjab, the problem of its accommodation at construction sites arises. Thus even where finances are plentiful, their optimal utilization becomes difficult. The availability of the major materials needed for roads — stone and quartz — is not a problem but cement has to be brought up from other States. The real difficulty arises in the construction of bridges and culverts, as much of the ingredients need to be imported involving high cost of transport.

8.23 The cost implications of these features in Himachal Pradesh are not very encouraging. The cost of metalled roads includes protection works also. The average cost of construction, excluding the cost of culverts and bridges for a nine feet wide road is about Rs. 28,000 per mile of road, for a 16-feet wide road it is about Rs. 90,000 and for a 24-feet road it is about Rs. 2.75 lakhs and exceeds the sum of Rs. 2·5 lakhs which is approximately to the cost of constructing one mile of the railway line in the plains. This is a matter worth serious consideration, and it indicates that since roads are a 'must' in Himachal development and their construction and maintenance are relatively more expensive in the Territory, a generous share of the Plan outlay should go to transport development.

Regional Distribution

8.24 Although road expansion is taking place rapidly in Himachal Pradesh, a slight shift in emphasis may be desirable in the long run. One of the influences on the road pattern, not prominent in the Territory, is the tendency towards urbanization. The scope for even medium industries is limited and economic development for the next decade will have to be agriculture and forest oriented. There, however, will be a change in the traffic pattern and certainly in the traffic volume. Horticulture, cash crops and dairying on the agricultural side, and forest-based industries and small units on the industrial side will contribute to the marketable surplus and also the import content, and these would need motor vehicle and motorable road.

Transport Accessibility

8.25 For transport accessibility two factors are important: nature of the terrain and ratio of road mileage to area. In a hilly area road mileage needed to connect two places is on an average double that of plains. On account of these two factors the poverty of road mileage in Himachal Pradesh becomes obvious. No wonder that large parts of the Territory are isolated and backward. Even with regard to forest roads (cart roads, bridle paths and inspection paths) the forests are not well served; it has 0·9 mile of road per square mile of forest area.

8.26 A comparison of the road mileage of different districts with net domestic output and total agricultural production suggests that, till very late, the construction of roads was not influenced much by economic considerations. Thus, Mahasu, which should have the highest index of road availability is only second from the bottom, the lowest being Mandi, whereas both Chamba and Bilaspur, not very important economically, are much better placed. The position should change with the implementation of a programme of planned industrial development.

Roads and Economic Regions

8.27 There are some areas in Himachal Pradesh which have an altitude over 8,000 feet. They are sparsely inhabited. Economically they are not important. Besides these areas, Himachal Pradesh can otherwise be divided into four economic regions, viz., area with horticulture and cash crops in Mahasu; forest and forest products in Mahasu and Chamba; minerals and mines in Mandi and Sirmur; and industries in Mahasu, Sirmur and Mandi.

8.28 It is desirable that every development project should have a transport content. This is particularly true of schemes relating to forest and mineral development. In the latter case road construction and maintenance should be connected with mining exploration and development programme.

Links with the Villages

8.29 As the rural set-up of Himachal Pradesh is one of dispersed villages, it will be neither possible nor necessary to connect every village with even a bridle path. Clusters of villages with focal point, such as the Community Development Centre, may become the objective of motorable roads. But no village should be more than three to five miles away from a primary road or half a mile from a bridle path, except in regions above 7,000 feet altitude. All motorable roads should become all-weather ones by 1966 and others by 1971. The pace at which the latter can be improved depends on the prospective traffic burden, topography and climate, the quality and the type of the soil and the availability of road materials. But broadly, the objective should be to metal them by 1971, if not earlier.

Outlay during 1961–71

8.30 This, of course, involves considerable outlay. The investment on both construction and improvement and a large part of maintenance in the Second Plan is Rs. 5 crores for roads other than National Highways. If the pattern suggested above is adopted, the outlay in the Third and Fourth Plans (exclusive of road transport) would be:

Year	*Outlay* (Rs. crores)
1956–61	5
1961–66	12·65
1966–71	18·0

This no doubt, is a considerable sum, but considering the key role of transport in development it does not appear to be much. Even with this outlay, the allocation will have to be carefully planned and phased both in spending and in road laying.

Transport

8.31 When it started functioning in 1949, the Transport Department took over the serviceable part of the small private fleet operating at the time. By 1958–59, 153 buses and 126 trucks

were in operation, but this number was inadequate to meet the needs. The deficiency was met by temporarily permitting private operators to step in. This arrangement has not, however, filled in the gap.

8.32 The route mileage in 1958–59 was 2,407 miles—about 10 per cent more than 1957–58 —i.e., one mile of every 4·5 square miles area and if the inaccessible and economically not valuable higher altitudes are omitted, there is one route mile for every 3·2 square miles. This should be regarded as very inadequate even for a backward State.

8.33 The mileage covered by the fleet in 1958–59 was three million and by the end of the Second Plan the annual mileage is to increase to 3·68 million that is, an increase of 53·3 per cent over the First Plan level. This gives one mile of route for every 2·3 square miles of area, which is insufficient to initiate an accelerated development. The ratio should be at least 1 : 1·5 by 1966 and 1 :1 by 1971 and as such, the technical and operational sides as well as the outlay allocation should be oriented towards this target.

8.34 Both petrol and diesel vehicles operate in the Territory, though the growing emphasis is more on the latter type because of the lower running cost. Two limiting factors in transforming the fleet from petrol to diesel are the initial capital cost which is about 45 per cent higher, and second, while the larger diesel vehicles may be economic, the narrow and circuitous Himachal roads along with the traffic load may not make the changeover from the petrol vehicle really desirable. And in allocating the transport outlay in 1961–71, greater weight may have to be given to this factor.

8.35 Roads by themselves are of little value without adequate, efficient and economic transport system. When Himachal Pradesh was formed in 1948, the inter-linking of the erstwhile self-contained, administratively distinct princely territories was a problem. Even within the individual States the transport system had not developed well. Mechanized transport was possible only over 300 miles of roads, and private operators—many of them single vehicle-owners—plied mostly old vehicles on a very limited road length.

8.36 In improving and extending transport communications, some problems arising from the hilly terrain have always to be faced, and they influence the transport policy and pattern of expansion as well as the magnitude of the outlay and the phasing of development. To start with, the roads are rough, rugged and with an uneven surface, all of which cause excessive wear and tear of the vehicles reducing their life by at least 50 per cent of the life of a similar vehicle on even the *kaccha* roads in the plains. This raises the issue of the repair and replacement of the vehicles. Because of the gradient, petrol consumption is heavy—an ordinary truck of three tons capacity giving about seven miles per gallon. All these increase the running cost per mile and hence the cost of goods transported.

8.37 The winding narrow roads and the blind corners limit the speed to eight to nine miles per hour reducing the average daily performance of a vehicle to about 40–90 miles, which is less than 40 per cent of the performance in the plains on similar surfaced roads.

8.38 With narrower roads, sharp turnings, over-hanging rocks and so on, vehicles with wider wheel base cannot be used and these necessarily tend to keep down the laden weight car load. Thus, Himachal Transport vehicles carry 17 to 30 passengers and 80 to 120 maunds of goods against 45–60 passengers and 200 to 275 maunds of goods carried by vehicles in the plains, i.e., the load is 33 to 50 per cent less than that in the plains. The outlay and returns implications are obvious. The cost of carriage will be higher, the returns on the outlay less and the outlay itself larger. With the heavy snow and monsoon rains, many Himachal roads become unmotorable

and the services can operate only seven to nine months in the year; and this keeps the staff and fleet idle for a considerable part of the year. All these features reduce the earning capacity of a vehicle in Himachal Pradesh to about a quarter of that in the plains.

8.39 Further, traffic is generally one-sided. During the fruit and potato seasons, the load is down the hills. This means that about half the transport capacity, uphill or downhill, is not employed most of the time, which makes for larger outlay, lower returns and under-utilization of vehicles and personnel, i.e., higher cost per unit transported.

8.40 These features have important economic implications: (*i*) the outlay on the purchase, running and maintenance of vehicles would be heavy; (*ii*) more vehicles would be needed to perform a given service operation, and administration would become complicated; (*iii*) since the full number of vehicles required to serve all parts of the Territory cannot be provided all at once, phasing the regional distribution of the services in terms of the volume, value, direction and nature of the traffic assumes greater importance; and (*iv*) these naturally increase the cost of transport and may thus influence development, unless the service is subsidized.

Vehicular Transport

8.41 While the normal efficient life of a vehicle is about 8 to 10 years, nearly a third of the operating vehicles are more than 10 years old, only 26 per cent have been in service for less than four to five years. This larger percentage of old vehicles raises two problems in planning the outlay on expansion of transport: first, the old units will have to be replaced to achieve efficient and economic transport and, therefore, resources will have to be diverted partly towards their replacement and this outlay would increase efficiency but not help the extension of transport; and, second, the balance of resources being limited, the increase in the vehicles will be slowed down and so also the expansion of transport facilities. This situation, in view of the key position transport holds in the economic progress of Himachal Pradesh points to three alternative solutions: (*i*) still larger outlay is needed on transport; (*ii*) a balanced and phased distribution of the allotted resources on modernization and on extension; and (*iii*) the scope for the private operator would be wider and less temporary, with greater regulation and with greater coordination between the public and private sectors. The First Plan provided a sum of Rs. 17 lakhs for transport services, and in spite of the late initiation of the programme, more than the Plan provision was spent by 1956. The Second Plan provided a larger sum—Rs. 55·35 lakhs—including Rs. 24 lakhs as the share of the railways; Rs. 32·75 lakhs have been earmarked for the purchase of new vehicles.

8.42 If road transport is really to be effective, one more vehicular aspect has to be planned out in the next decade, namely, replacement. Efficiency and economy of the service depend on the condition of the vehicle. The life of a petrol driven vehicle is 100,000 miles and that of a diesel-driven one 150,000 miles. On this basis 175 vehicles should have been replaced in the Second Plan period, but in the three years 1956–59, 22 vehicles were replaced and by 1961, 53 more may be replaced, thus leaving a shortfall of 100 vehicles to be carried over to the Third Plan (Table 33). Whatever the justification, the delayed replacement has important economic implications. First, by keeping old vehicles on the road, efficiency of service decreases and cost increases, particularly in an area where the terrain and other factors have already affected efficiency and cost. Secondly, as replacement of vehicles is a continuing process, delay cumulatively increases the load of replacement and impedes the real expansion of services. Further, it

upsets the planned outlay of resources. A larger share of outlay in the Third Plan will have to be by way of replacement.

8.43 The total capital on nationalized transport in 1959 was about Rs. 46·5 lakhs, the gross earning for 1958–59 was about Rs. 71 lakhs and the anticipated net profit about Rs. 5·3 lakhs, i.e., 11 per cent on the capital employed; out of which 34·4 per cent comes from vehicles attached on commission basis. This is in spite of the handicap from which the transport system suffers in Himachal. It speaks well of the present transport administration. The large profits are traceable to the State monopoly of transport. This raises the issues: whether the transport services should be run so as to earn revenue for the general coffers, or whether the profits should be diverted for transport improvement and expansion in addition to the grants from general revenues or whether the freight rates should not be reduced to induce more traffic. In view of the key position of transport in Himachal economic development, it seems desirable either to plough back the profits into transport improvement or to reduce freight rates.

Transport Routes

8.44 For maximizing the benefits of any transport system for developmental purposes, not only the vehicles and the economy of their working but also the routes and regions of operation are significant. In 1958–59 the Himachal Transport was operating on 61 routes, the buses operating on all and trucks only on 42 of them. Of passenger vehicle routes Mandi accounted for 31 per cent, the Dhali region for 26 per cent and Nahan and Bilaspur 18 and 20 per cent respectively whereas the Chamba sub-region had only five per cent of the passenger routes. Out of the 42 goods vehicle routes, 76 per cent are in Mandi and Dhali (Mahasu) regions, while the other two regions and the sub-region share 24 per cent of the routes. During the potato and apple season the routes are increased in the Dhali region.

8.45 In the first place there is a concentration of routes—passenger and goods in two districts—out of proportion to their economic potential and, in the second place, Chamba is most neglected at the moment. As transport is one of the pre-requisites of development in Himachal, its expansion in potentially attractive regions should precede actual regional development and even demand for the services, i.e., transport should lead development and not merely follow it. This suggests that in a future transport policy the neglected districts should get greater attention.

Seasonal Traffic

8.46 Because of the agricultural nature of the economy, there is seasonal traffic; for instance between September and December in 1958–59, about one million maunds of potatoes and apples were cleared. The important goods transported are potatoes, fresh and dry fruits, ginger, foodgrains, sugar, salt, construction materials and vegetables. Out of the total traffic transported in 1958–59, 380,000 maunds were imports, about 1·5 million maunds were exports from the Territory and the balance of 2·6 million was internal traffic movement. The outward movement is in potatoes, citrus fruits, dry fruits and ginger between September and December as there is very little of inward traffic during those months. The cost implications of this are very significant when planning transport outlay. As there is one-sided traffic, freight rates have to

be high in Himachal Pradesh. Moreover, the narrow winding and *kaccha* roads reduce the maximum laden weight to 120 maunds per vehicle and on certain roads it has to be even as low as 70 maunds. This reduces earning per mile and profitability and, therefore, the capacity of the transport organization for self-sustained expansion through building development and depreciation reserves. Improvement of the situation necessarily depends on better, wider and more roads. About a third of the bus services are suspended during the rains and snowfall. Although about a quarter of the services are not economic, they are run in order to link the interiors.

Some Complexities of Transport Operation

8.47 The wide variations in altitude and numerous rivers and streamlets have introduced certain complexities. Ninety per cent of the transport operates on *kaccha* rugged roads. This leads to slow, risky and costly operation. Further, the vehicles can ply only during fair weather. All-weather roads, metalled and tarred, would lengthen the period of operation and, thus, make it more economic to the operator and less costly to the user. During 1961–66, about 600 miles of additional roads may become motorable and about 200 more vehicles will be required. Current inadequacy of vehicles is made worse by about 45 per cent of the vehicles being under repair; partly because of paucity of staff due to the condition of the roads and terrain and partly due to inadequate and infrequent servicing facilities. This leads to temporary employment of the private vehicles the permits for which yield revenue, e.g., in 1958–59 they paid the Territory Rs. 24·5 lakhs as compared with Rs. 46·7 lakhs earned by the departmental vehicles. As there is not sufficient fund the department is not in a position to increase its own fleet. However, with the extension of roads, traffic is bound to increase and the existing fleet will need expansion by 50 per cent in 1961 and by another 50 per cent in the Fourth Plan period.

Training for Staff

8.48 With the increase of the fleet, more staff will be needed, in fact, more than in proportion to the increase in vehicles. In-service training becomes essential. In these circumstances it is better to recruit local persons and train them. The Central Workshop at Taradevi can well serve this purpose.

Traffic Movement

8.49 In order to reach broad gauge railheads, Himachal vehicles have to pass through Punjab. Although at present there is a Punjab-Himachal transport agreement, movement is still not completely free because of the insistence on the 'reciprocity basis'. Reciprocity in a strict sense becomes impracticable as the exports from Himachal are four-fold larger than imports. Free movement in the Himachal-Punjab-Uttar Pradesh region without the clog of reciprocity is desirable, but perhaps to start with, at least, reciprocity on a mileage basis as in Bombay, Mysore and Andhra Pradesh may be adopted in 1961–66.

8.50 The dieselization of vehicles, a programme that the Department has already taken up, should have a regional basis. While Sirmur and Bilaspur can be immediately considered for

this change-over, the terrain would hold up the speed of dieselization in Mahasu, Chamba and Mandi. Besides, the type of goods traffic in Mahasu and Chamba is such that it needs frequent rather than bulk service.

Road Plan

8.51 Any transport policy should have a comprehensive road plan. The attempt at road development in the First and Second Plans appears to have lacked such comprehensiveness, although some facets were adequately considered.

8.52 Five aspects will have to be borne in mind: First, the technical facet comprising the type of roads needed in terms of width, gradient and surface, the relative role of new constructions and improvements needed, road ancillaries such as bridges and culverts, and their regional distribution and the executive side represented by the personnel. Second, the economic aspect relating to the regional allocation of roads already existing or to be built. This requires the consideration of the roads in terms of existing development — adequacy, distribution and cost of service, as well as the development potential at least as known at the moment and in terms of the planned regional growth. The financial outlay and return implications — direct and indirect — will have to be considered. Third, the present and future road development programmes at least till the end of the Fourth Plan will have to be considered for dovetailing. Fourth, the administrative facet, i.e., practicable achievement in terms of the available technical manpower. Finally, the sociological aspect, i.e., the isolation and backwardness of the area and of the people's demand for better roads.

8.53 While the Plan should be comprehensive, it should be realistic and optimal, and not unbalanced. This aspect draws attention to the available men and material as well as to the rate of contemplated economic growth, the cost returns consideration and the availability of the operating vehicles — urban and rural areas, their extent, needs and development, future trends of growth or decay and needs of undeveloped and forest areas. The location of tourist and commercial centres and industries will be important considerations also.

8.54 A more important determinant is the major objectives of the policy, i.e., the road density to be attained. The present density in Himachal is 25 miles of all types of roads per 100 square miles and of this, motorable roads — primary and secondary — would be about 900 miles, i.e., 9 for 100 square miles. This mileage should be doubled by 1966 (i.e. 2,000 miles) and trebled by 1971 giving a density of 25 miles of motorable roads for 100 square miles at the end of the Third Plan and 35 to 40 miles by 1971. The reasons for the slow expansion in 1966–71 are that (*i*) in view of the terrain, it may be physically impossible to extend motorable roads and (*ii*) as the interior is relatively sparsely populated, and less developed and developable, mobility of men, goods and ideas can be effected through the less expensive narrow roads. Even with this expansion, the real addition would be smaller than the apparent mileage because hill road alignments are circuitous and an allowance of 80 to 100 per cent would be necessary. Thus, the effective motorable road miles by 1966 would be about 15 miles per 100 square miles, and 20 to 25 miles, by 1970. The second objective for Himachal should be that all known and existing economic regions should have metalled motorable roads by 1966 and all potential ones by 1971. The current coordination between roads and economic regions is not unsatisfactory.

Road Expansion

8.55 Practically all the horticultural (Table 12) areas or at least their collection centres are on or near the roads, and so are the existing industrial centres — small and medium (Table 38). The small industries suggested in this report are also in towns with good road connections. It is, however, the potential forest-based industries which, at least so far as the movement of the basic raw material is concerned, appear to need roads. A couple of mineral based industries can be started in towns with roads; further exploration into potential mineral wealth would require road expansion.

8.56 As road needs and economic growth are neither regionally nor quantitatively static, a periodic reappraisal of road adequacy will have to be made.

8.57 In determining this policy, one important limitation of Himachal Pradesh should be noted. No doubt, the input-output criterion demands that a road, particularly a surfaced motorable one, should be fully utilized which implies adequacy of vehicles and adequacy of traffic to use vehicle to full capacity; but this is almost impossible for Himachal Pradesh, at least in the next decade, for traffic is seasonal and will be one-sided.

Broad Principles Suggested

8.58 Three broad principles may be followed as guides:

(*i*) Top priority be given to making the existing roads usable by attending to the bridges or culverts, widening them where needed, and converting them into all-weather roads. The major criteria here would be the assurance of continuous flow of traffic and the maximum return that can be anticipated.

(*ii*) All roads cannot be made primary; but at the same time the interior has to be opened up; hence a phasing of the outlay is necessary. In 1961–66 primary roads may be raised upto high specifications, and other roads in the interior may be brought up to low specifications. And in the Fourth Plan period even the latter may be improved so that most of them would reach a respectable all-weather standard.

(*iii*) In improving the latter as well as opening new ones (except where industries e.g. forest based ones, are developing), local ingredients may largely be utilized to effect economy in outlay.

8.59 From administrative side three considerations should be looked into:

(*i*) All roads, except the village ones, should be in charge of PWD for construction, maintenance and for effective integration of the primary and of feeder roads.

(*ii*) Village roads, inter-connecting the villages in the cluster, may be looked after by the local authority such as the Community Development Block or Territorial Council.

(*iii*) As road needs and the rate of economic growth are neither regionally nor quantitatively static, periodic traffic surveys should be instituted.

Chapter 9

Tourism

Varied Economic Advantages

9.1 Himachal Pradesh is fortunate in having attractive tourist sites. There are various tourist attractions, excellent beauty spots, lakes and streams provide ample opportunity for fishing and places for trekking are spread out all over the Territory. The invigorating climate and the altitude have made the Territory a health resort and above all, a number of pilgrim centres attract a large number of devotees. Tourism does not contribute much at present, but its potentialities are large. Varied economic advantages will flow from investments ancillary to the expansion of tourism such as large variety of trades and industries relating to dress, shoes and other tourist accompaniments and direct or indirect employment to a large number of porters, contractors, hoteliers, traders and transport and tour-operators.

Types of Tourists

9.2 Three types of tourists visit the Territory: first, the pilgrims numbering quite a few thousands, about half of whom are from outside the Territory, visit the seasonal festivals and fairs held at different places and stay at such sites from 2 to 5 days. Secondly, there are those who come to health resorts and cooler places during summer months, numbering a few thousands and stay for a few days or a few weeks every year. And the third type includes a few people who are afflicted with wander-lust. Whereas the first type comprises persons from all economic strata of society, the latter two belong mostly to the higher income groups.

Policy for Development of Tourism

9.3 But tourist traffic has not so far received enough attention either at the stage of formulating a policy or of operating it successfully. One important obstacle was the delay in obtaining the sanctioned finance from the Centre for development of tourism. Much remains to be done regarding opening up of the interior areas of tourist interests — construction of roads, efficient transport and proper boarding and lodging facilities. Even those who enjoy hiking and trekking and for whom good roads and transport is of lesser importance, the halting base is often in areas outside Himachal Pradesh like Simla where facilities are better. The latter being a developed hill station, capable of accommodating upto 100,000 visitors, is naturally used as a base for touring Mahasu. However, it suggests, on the one hand, that the Territory has still to develop its own tourist services and on the other, that Punjab and Himachal Pradesh could enlarge their tourist traffic and effect a good deal of saving in their promotional expenditure by co-operating in these activities. The undertaking by the Tourist Advisory Committees of both

Himachal Pradesh and Punjab, to effect coordination on this basis is, indeed, a welcome step in the right direction.

Tourist Traffic Promotional Activity

9.4 A tourist traffic promotional activity has two facets, one of attracting a larger number of visitors and the other of making the flow of such tourists regular. To reach the first objective, the pre-requisite is the provision of ample and cheap facilities and for the second, the provision of attractions during the slack seasons, for example, winter sports like skating and ski-ing. In a well organized system, visitors to fairs should get lodging in tents and community messing facilities ought to be available to them at moderate rates. For others, rest house and dak bungalow accommodation, which is so far limited to about one hundred suites, has to be increased.

Tourist Facilities

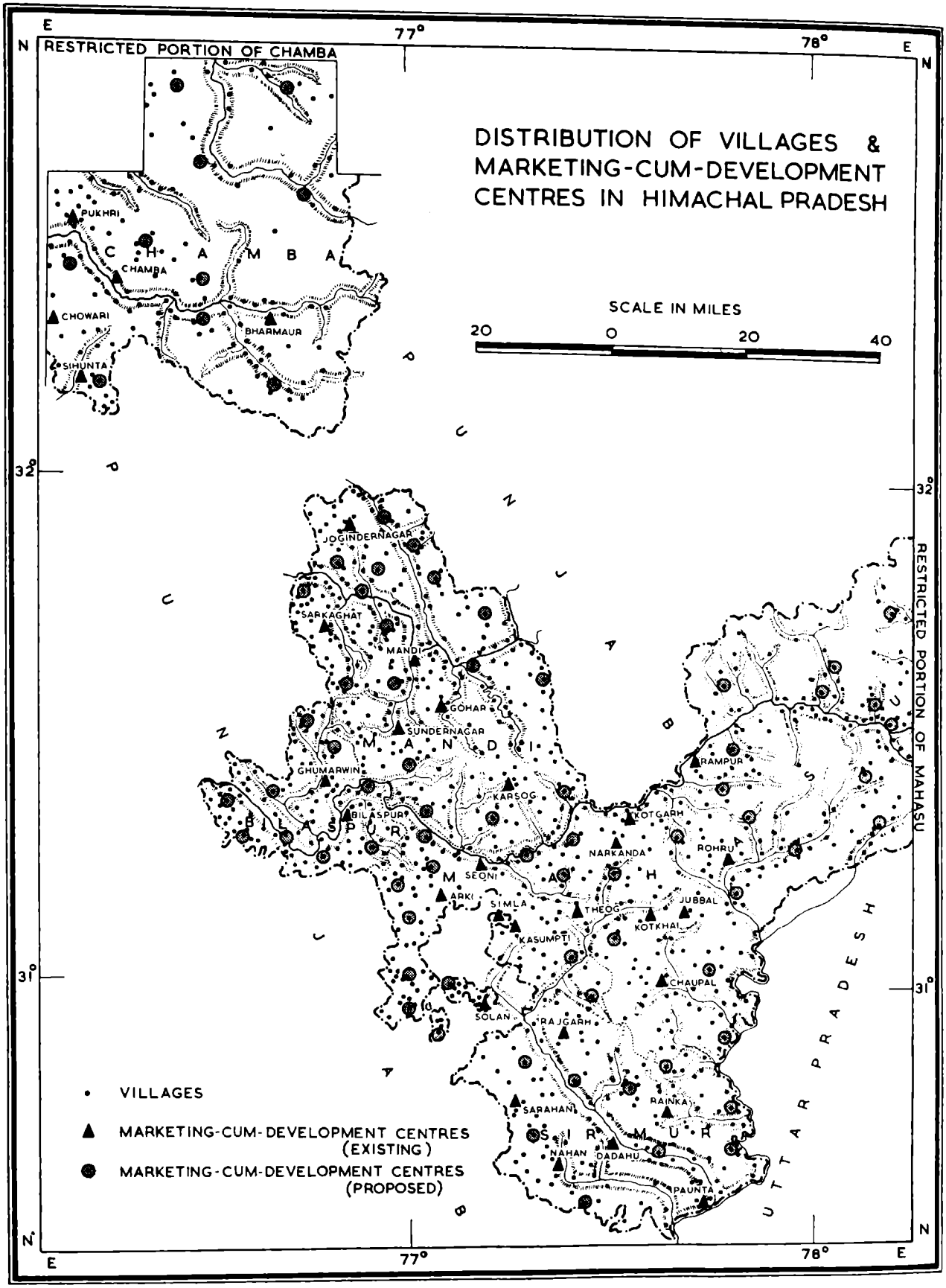
9.5 A basic consideration in attracting tourist traffic is to provide different types of facilities to suit different categories of visitors. The charges vary from place to place, but these are approximately Rs. 2 for lodging and Rs. 7 for boarding per day. These are a little too expensive to attract the low income groups. The Administration has a proposal to construct a chain of tourist holiday houses at a cost of Rs. 13 lakhs to provide accommodation to about 200 persons at Solan, Mashobra, Tattapani, Rampur, Rohru, Nahan, Moryog (Giri) Paonta, Bilaspur, Riwalsar, Mandi, Jogindernagar, Sundernagar, Chamba, Khajjiar, Bharmour and Naina Devi. Other ancillary services such as tourist information bureaus would attract tourists. The paying guest system is a useful device and subsidizing it may be considered.

Need for Publicity

9.6 But publicity is the key for opening the door to a large tourist traffic. Publicity has so far been directed towards attracting the higher income groups. A re-orientation of the present policy is needed. Unlike the publicity campaigns so characteristic of the commercial concerns in the sphere of travels, it is the institutional type of publicity that helps to educate people about historical places, architectural wonders and the advantages of short visits to new places. The aim of the programme with respect to costs should be that a middle-class family of five may be able to have the benefit of a holiday by spending a moderate sum.

Good Prospect

9.7 Himachal Pradesh has potentialities for the successful implementation of an ambitious programme of tourism. During the Third Plan large capital outlay for construction of tourist homes and low income group rest houses, ski-ing facilities and purchase of ski outfit, setting up of information bureaus and transport and trout fishing facilities should be provided. For some time to come the income from tourists will be small. But once people are made tourist-minded, the incoming revenue is likely to be considerable. The outlay in 1961–66 may be of the order of Rs. 20 lakhs and Rs. 25 lakhs in 1966–71.


DISTRIBUTION OF VILLAGES & MARKETING-CUM-DEVELOPMENT CENTRES IN HIMACHAL PRADESH
RESTRICTED PORTION OF CHAMBA
SCALE IN MILES
20 0 20 40
77°
78°
32°
31°
E
N
PUKHRI
CHAMBA
CHOWARI
BHARMAUR
SIHUNTA
JOGINDERNAGAR
SARKAGHAT
MANDI
GOHAR
SUNDERNAGAR
GHUMARWIN
BILASPUR
KARSOG
SEONI
ARKI
SIMLA
KASUMPTI
THEOG
KOTKHAI
JUBBAL
CHAUPAL
SOLAN
RAJGARH
NARKANDA
KOTGARH
ROHRU
RAMPUR
SARAHAN
RAINKA
NAHAN
DADAHU
PAUNTA
RESTRICTED PORTION OF MAHASU
UTTAR PRADESH
VILLAGES
MARKETING-CUM-DEVELOPMENT CENTRES (EXISTING)
MARKETING-CUM-DEVELOPMENT CENTRES (PROPOSED)

Chapter 10

Marketing

Important Facet of Growth Planning

10.1 Economic growth in general and some facets of it in particular, influence the type, direction and extent of marketing; and, at the same time, are themselves influenced by the need for and structure of marketing. Thus, industrial development, forest utilization, and the cultivation of cash crops are determined by the scope for disposing of the products, and depend on an exchange economy. The expansion of motorable roads in Himachal Pradesh is mainly market-oriented. Outlay on communications in the next decade will, therefore, have its repercussions on the pattern of marketing which thus becomes an important facet of growth planning. Mere expansion will be of no avail if the products cannot be marketed.

10.2 Difficulties of terrain, inadequate transport facilities and the volume and kind of current production have given Himachal Pradesh a system of marketing offering little incentive to increase production. These have rather reduced the output and discouraged the regular flow of goods into, and, from the Territory. Large areas in the Territory are isolated and have developed a closed economy. Local exchanges take place through barter, and this contributes towards isolation and self-sufficient character of the region. In a few places, which are comparatively easy to reach, more developed markets have come up but even now large tracts have considerable number of backward people participating and transacting some sort of business in annual and occasional fairs. Some migratory tribes in the Pradesh sell their produce only once in the year.

10.3 The Pradesh has currently not much of imports and exports. The important exports are potatoes, ginger and fruits and the imports are fabrics, domestic utensils, leather goods, sugar, kerosene, cement, coal and iron and steel. Even among tribal families money economy is spreading fast.

Striking Feature of Present System

10.4 It is difficult to classify the marketing system in the Pradesh. The economy of Karapat, of Rampur Tehsil, Pekha Patwar Circle and Dodrakwar of Rohru Tehsil, Cheta Stota parganas of Chopal Tehsil, Chohar area of Jogindernagar, Saraj area of Chichiot, Mahan and Chichool villages of Bhadnota and Bananter parganas, whole of Baira parganas, part of Chanju pargana of Churah and Sirmur, are still of the self-sufficient type. Their exchange transactions are limited and therefore a barter economy confined to the local area. The tribal areas in Chini, Pangi, Bharmour and Lahaul have the periodical fairs where money economy is more pronounced. The participants come from a larger area but are still local, and the products exchanged are limited in volume and variety. There are the fully monetized markets of the towns such as at Nahan and Solan, where the transactions are carried out not only for local consumption but also for inter-State movements. One striking feature of the existing structure of marketing is that the income of

the participants increases as one moves up from the self-sufficient to the monetized types. The shift from one type to another depends on communication facilities, knowledge of the outside markets and type and quantity of goods produced.

Marketing Methods and Practices

10.5 The agricultural marketable surpluses are at present handled mostly by individual dealers and *arhatias*. The producers generally bring their produce to the markets near the roadheads where the assembling and distribution operations are carried on. But apples are sold by the growers in the orchards and the buyers themselves arrange for transportation to the terminal markets from where they are exported to the neighbouring States. As the orchards are generally near the roadheads mechanized transport is employed. Moreover, the apples are also classified into varieties and the prices are settled according to the size and variety of the apples. Although there is no legislation, this market practice has helped standardization. The seed potatoes which are mostly exported to the plains are graded and sized in a loose customary manner and the practice differs from place to place. For other produce there is not even such customary standardization.

10.6 The markets vary in size from small hutments to properly laid out wholesale markets having shops and godowns. All these are unorganized and are governed by no written rules and regulations. At present there are 37 such markets in the Pradesh. The Chamba district has 11 such centres, half of which serve the needs of the local people in the inaccessible areas and the other half have their link with Punjab. In the other districts all the centres are located on motorable roads and serve as both the collection and the distribution centres. The collection of the commodities is mainly from local neighbouring areas and the distribution outlets are generally in the neighbouring States of Punjab and Uttar Pradesh, while seed potatoes are distributed all over India.

10.7 The functionaries in these markets deal in small groups consisting of collectors, wholesalers, retailers and commission agents. They also finance the cultivators for raising the crop and advance money against the standing crop, and enter into contract to purchase their produce. The commission agents mainly act as financiers of trade.

Demand from Urban Areas

10.8 The effective demand is from the urban areas in the neighbouring States which have larger per capita incomes and a higher standard of living. There are in Himachal Pradesh hardly a dozen towns and their demand for cash crops is limited. About 66 per cent of the produce is estimated to be exported; the rural areas retain about 30 per cent for consumption and seed purposes and the balance is locally consumed. Goods are stored not in godowns and warehouses, but in temporary sheds and hutments. This can cause damage to goods.

Freight and Other Charges

10.9 A major item in the price of goods marketed is freight. Transport charges often amount to 50 per cent of the sale price. Carriage charges differ with the nature of the terrain, being heaviest in hilly places like Pangi and Chini, where roads are undeveloped. Transport in many areas is still on human back, mules and sometimes on sheep. Where vehicular traffic is possible,

transport services run by the Administration are often more expensive than the private sector they have replaced. Unlike the plains, overhead charges are few, producers paying only carriage which is high and octroi which is low. Commission and other charges are also small varying between 1·56 per cent to 2 per cent, on the value of goods. The largest single item of cost is transportation, which would emphasize the need for cheapening it, for proper marketing to develop.

Problem of Marketing

10.10 Fairs, which constitute the most important single channel of marketing, have two prominent drawbacks: sales are made under pressure and there is a lack of market intelligence. So far little has been done in regulating these markets and ensuring a fair deal. Departmental efforts include only schemes for grading and marketing of seed potatoes, collection and dissemination of information about agricultural prices through news bulletins and opening up of a few handicraft emporia to sell primarily industrial goods manufactured in the public and private sectors.

10.11 The problem of marketing in Himachal Pradesh is largely a matter of organization and regulation and partly of finance. Measures urgently wanted are prevention of adulteration, standardization of weights and grading and establishment of collection and distribution centres. These require organization and not large investment. These centres should ultimately serve as the marketing foci, both for collecting local produce and for meeting the farmers' needs. To ensure a fair service and on such a wide scale the initiative should come from the Government or government supported and guided organizations, such as the cooperatives and the panchayats. Side by side, a programme of closer supervision, regulation and development of markets should be formulated and rigorously executed.

10.12 Thus in the next decade certain steps should be taken to lay the foundation of good marketing. Some measures towards this end are suggested below:

1961–66

(*i*) Standardize weights and measures;

(*ii*) Establish 10 major collection and distribution centres, two in each district;

(*iii*) Start 10 cooperative marketing societies, two in each district: one to specialize in marketing fruits and perishables, and the other in less perishable products;

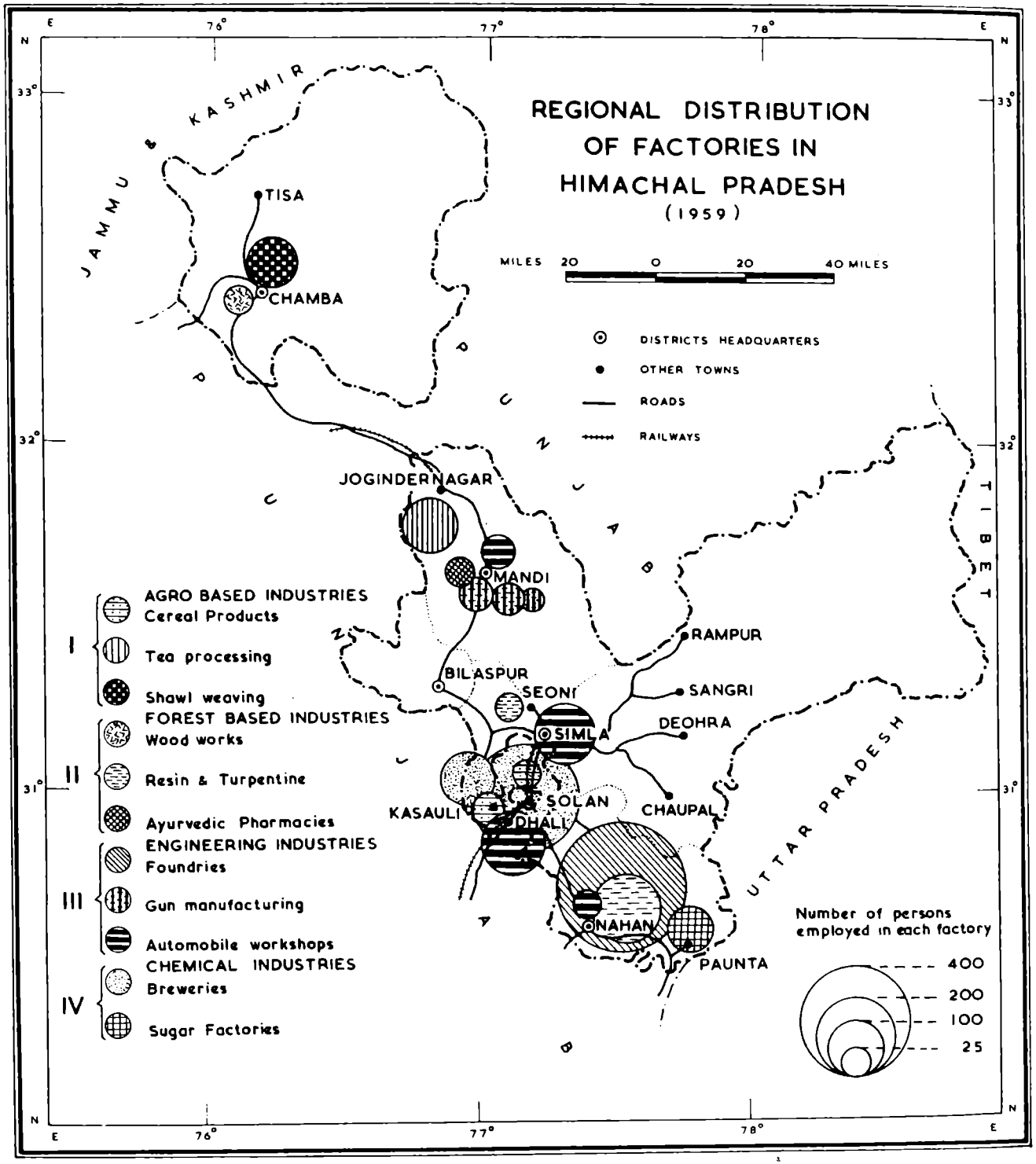
(*iv*) Open three regulated markets, one in Mandi and the others in Mahasu and Sirmur;

(*v*) Develop and execute a programme of closer supervision, regulation and development; and

(*vi*) Establish warehouses in each of these major centres.

1966–71

The number of units in (*ii*), (*iii*) and (*iv*) may be doubled and greater freedom may be given to the cooperatives and panchayats to build markets. Finally, the number of warehouses may be increased so as to cover all the existing 37 centres.


REGIONAL DISTRIBUTION
OF FACTORIES IN
HIMACHAL PRADESH
(1959)
MILES 20 0 20 40 MILES
DISTRICTS HEADQUARTERS
OTHER TOWNS
ROADS
RAILWAYS
JAMMU & KASHMIR
TISA
CHAMBA
JOGINDERNAGAR
MANDI
BILASPUR
SEONI
SIMLA
SOLAN
KASAULI
DHALI
NAHAN
PAUNTA
RAMPUR
SANGRI
DEOHRA
CHAUPAL
TIBET
UTTAR PRADESH
I AGRO BASED INDUSTRIES
Cereal Products
Tea processing
Shawl weaving
II FOREST BASED INDUSTRIES
Wood works
Resin & Turpentine
Ayurvedic Pharmacies
III ENGINEERING INDUSTRIES
Foundries
Gun manufacturing
Automobile workshops
IV CHEMICAL INDUSTRIES
Breweries
Sugar Factories
Number of persons employed in each factory
400
200
100
25
76°
77°
78°
33°
32°
31°

Chapter 11

Industry

11.1 Himachal Pradesh is one of the least industrialized among the States and Territories in India. In 1955–56 factory enterprises were practically non-existent and contributed less than one per cent (Rs. 18·4 lakhs) and small enterprises about 10 per cent (Rs. 209·04 lakhs) to the total income of the Territory. There are a number of registered and unregistered establishments.

Registered Establishments

11.2 Among registered units the Nahan Foundry, the gun factories of Mandi and the Iravat Industries at Chamba have the advantage of local skill and early start of their establishments. The Solan brewery and the Kasauli distilleries depend upon the supply of Rajasthan barley and Bengal bottles, and market their products all over India. Good water supply and the cool climate attracted the industry to Solan. The advantage of both Jogindernagar and Solan, two important industrial centres, is the easy accessibility they have by rail and road.

11.3 The rosin and turpentine plants — one at Nahan and the other at Suni — are the only two forest-based units in the Pradesh. The existing units, one in the public and the other in the private sector, utilize 35 per cent of the rosin produced in the Territory. The collection of rosin is done by contractors to whom the forests are leased out. The processing methods are generally crude, except at the plant under the management of the Forest Department which has been recently reorganized. Rosin is an important industrial chemical used in varnish, soap, paper and phenyle industries. Attempts should be made to collect more of the natural resin and process it for rosin and turpentine.

Unregistered Establishments

11.4 There is a sizeable number of unregistered establishments. These are usually located in urban areas and manufacture both consumer and producer goods such as hosiery items, furniture, utensils, footwear, agricultural implements, guns and gunpowder, and also undertake repair and servicing. Very little information is available about their size and structure. Most of the unregistered factories in Himachal Pradesh are non-resource based, and are located at places of local demand. Usually, their distribution has followed urbanization in different districts.[1] The Mandi district has the largest number of these establishments — specially of the engineering type. Leather work is important in the Chamba district.

[1] According to the 1951 Census, Mandi had 35 per cent of the urban population, and, accounted for 55 per cent of those engaged in production other than agriculture. Bilaspur had 9 per cent of the urban population and 8 per cent of industrially occupied population.

Cottage Industries

11.5 In cottage industries, Mahasu leads in woollen goods, primarily spinning, and Chamba in dairy products.[1] Bamboo work, carpentry, blacksmithy and potteries are found in almost all parts of the Territory. There is a considerable number of oil *ghanies* (indigenous oil-pressing apparatus), leather and wood works and blacksmithy shops. Most of these are primitive in technique and traditional in structure; some of them, mainly family units, meet domestic requirements. The needs of the rural area are also being met by locally tanned leather though the methods used are crude.

Tanning

11.6 Tanning is a much less known art in Himachal Pradesh than shoe making. The known methods of flaying, salting and tanning are crude. Cobblers in towns often use leather brought from Kanpur and Calcutta. The existing leather industry does not meet even the local demand as is indicated by import statistics.

Bee-keeping

11.7 Bee-keeping is another cottage industry prominent in Chamba and Mahasu. The latter district provides part-time employment to over 5,000 families. The present methods of extraction are primitive. The Village Industries and Khadi Commission and the Department of Community Development are introducing improved types of beehives. In Chamba one beehive costs Rs. 10 (as fixed by the Khadi and Village Industries Commission) which is a high price judged by local, rural standards. These beehives have to be brought from distant places in Punjab and a proposal to manufacture them locally is under consideration. The industry has the potentiality of providing part-time employment to about 20,000 families. The immediate requirements are three: inexpensive beehives which should be locally manufactured; a number of honey collecting centres, on a cooperative basis; and wider marketing and publicity as in the bee-keepers' cooperatives in Coorg in the Mysore State.

Oil-Pressing

11.8 Oil pressing is a widely dispersed industry particularly in isolated areas. In the context of current oilseed output even the setting up of up-to-date oil expellers may not be economical.

Potteries

11.9 Village potteries are found all over the Territory, especially in Sirmur and Mandi. In Mandi the main difficulty is the dearth of the right type of clay. Earthern wares, therefore, are expensive in the interior villages in spite of the existence of a large number of pot-makers. There are, however, good clay deposits in Paonta in Sirmur. Better facilities to transport clay

[1] Most inferences have been drawn from the Industrial Survey Reports of the Extension Officers in Himachal Pradesh.

and the expansion and improvement of the existing training-cum-production centre may be necessary.

Embroidery Work

11.10 The All-India Handicrafts Board has a programme to develop a 'Revival of Old Arts Centre' in Chamba township. It appears that already the Industries Department has introduced a scheme called the 'Revival of the Old Art' of stitching in Chamba. There is another such scheme for embroidery work on leather. Embroidery work on leather popular in Chamba district has market outside the Territory and even outside the country. Two requirements of this industry are: better design to cater to the external markets and better organized marketing facilities.

Problem of Cottage Industries

11.11 By and large, the problem in the case of cottage industries is as much of finance as of technological improvement and marketing.

Technical Training

11.12 Technical training is imparted through the production-cum-training centres set up and controlled by the Industries Department. There are at present 51 such centres in which 734 artisans have received training so far. A period of one year is considered sufficient to turn out efficient workmen. The follow-up programme now introduced in a few centres to provide gainful employment should be extended to all training centres. Also, the setting up of common facility centres as done at present, should continue to receive due attention and greater heed has to be paid to the functional needs of industry and for the gainful employment of the ex-trainees. The latter should be encouraged to seek technical advice, loans and subsidies (wherever permissible) for their rehabilitation. The larger technical institutes, on the other hand, appear to be well run.

11.13 The Industries Department has opened two emporia so far and is keen to raise the number to five. This is considered sufficient to meet the present needs of the private producers and Government centres. The emporia sell the goods manufactured in the training-cum-production centres and they also act as commission agents to private individuals and cooperative societies for selling their products.

11.14 Greater attention will have to be paid to the cottage units relating to weaving of woollen textiles, sericulture, cotton spinning and minor crafts. Here, again, the basic trouble in formulating a comprehensive plan of development is inadequacy of information regarding cottage industries.

INDUSTRIAL POLICY

11.15 In formulating the industrial policy for the next decade, three major issues have to be considered. First, what is the place of industries *vis-a-vis* the primary sector, particularly agriculture and forests, in the light of the known resources and the possibilities. Second, following broadly the criterion of comparative costs, the question is as to the lines which the Territory

should follow in the utilization of its energies and resources. Third, as the Territory is best suited for small and cottage units (on account of its tradition and topographical position) what is the possible role of large and medium industries.

11.16 Normally industries are either mineral-based, forest-based or agro-based, but where technical skill is available in a marked degree or a wide market for the product is found near-about, industries can also be non-resource based. With the present knowledge, excepting a pig iron plant, few mineral-based industries can be visualized. Similarly, although the forest potential appears to be very large and the available forest wealth considerable, large scale forest-based industries (paper mill for example) will have to wait for the reorganization of the method of extraction, transportation and conversion. The pattern of development may change once these necessary developments have taken place.

11.17 The basic step is to undertake a comprehensive, detailed and thorough survey of mineral and forest resources in terms of cost of production and marketing of finished goods. Moreover, there are at present other important handicaps. Transport facilities are inadequate and expensive. Local enterprise and initiative are limited except in Mandi and Nahan, where opportunities of employment have built up technical skill of a high order, which otherwise, is rather scarce. The removal of these handicaps should receive urgent attention.

11.18 The broad bases of the Territory's policy should be two-fold: (*i*) to develop local industries to meet local demand, and (*ii*) to develop those industries with a comparative cost-advantage to cater to outside markets. In the first category would be some of the small engineering and most of the cottage industries, and in the second, the chemical, agro-based and forest-based industries. Many of the handicrafts and small units could be based on outside markets provided two steps are taken to increase their competitive efficiency: (*a*) improved designs to suit the markets and (*b*) quality control to bring about uniform standards and production specification. This would require fixing up a quality mark and standards of production and provision of technical guidance/inspection, control and even the supply of uniformly good raw materials, working out competitive costs of production through improved equipment, better training and adequate transport.

11.19 In the formulation of the industrial pattern for future Plans enters another factor — the limitations placed by the Second Plan on the Third and by the Third on the Fourth, namely, the spill-over from one Plan to another and other successive Plans. The First and Second Plans, for instance, emphasized artisan training and the introduction of better production methods. Not enough has been achieved in either of these directions and much still remains to be done in the Third Plan. Similarly, the measures for the improvement of handicrafts, such as embroidery, woollen shawls and drugget weaving training centres, and provision of common facilities for the small entrepreneur, the art and craft centres, the industrial estates and some small industries' scheme will have to be continued. Some of the new schemes introduced in the last year of the Second Plan will have to be carried on, e.g., reorienting the training programme in the vocational centres by starting five new centres, one in each district. Most of the schemes are individually not of major importance but, cumulatively, they claim considerable outlay to be earmarked for them in the Third Plan and this limits the flexibility of the Plan structure.

11.20 Attention in the new schemes should, however, be directed to the ways and means of overcoming the existing defects in the structure of the cottage and small industries. The major limitation in programming for small enterprises and cottage industries is the deficiency of relevant data. The first step, therefore, is to make a comprehensive survey of cottage industries

and handicrafts as well as a detailed geological exploration and the systematic mapping of the Territory. This would provide the basic information for a well-conceived Plan. Such a survey would take considerable time. Immediately, however, a statistical cell should be established in the Industries Department for collection of comprehensive data.

11.21 Other limitations also will have to be looked into. Finance is a bottleneck both for starting new units and for improving and expanding existing ones. The cumbersome loan rules have now been liberalized in Himachal Pradesh. Individual entrepreneurs and cooperatives should be provided with more funds. Needless delay ought to be reduced by decentralizing the power to grant loans. For example, more powers might be given to the Director of Industries and through him to the district officers.

Industrial Estates

11.22 Production will have to be improved by setting up more industrial estates. There is already one in Solan. During 1961–66, one industrial estate should be established in each district headquarter. Depending on the success of the scheme the number may be doubled during 1966–71.

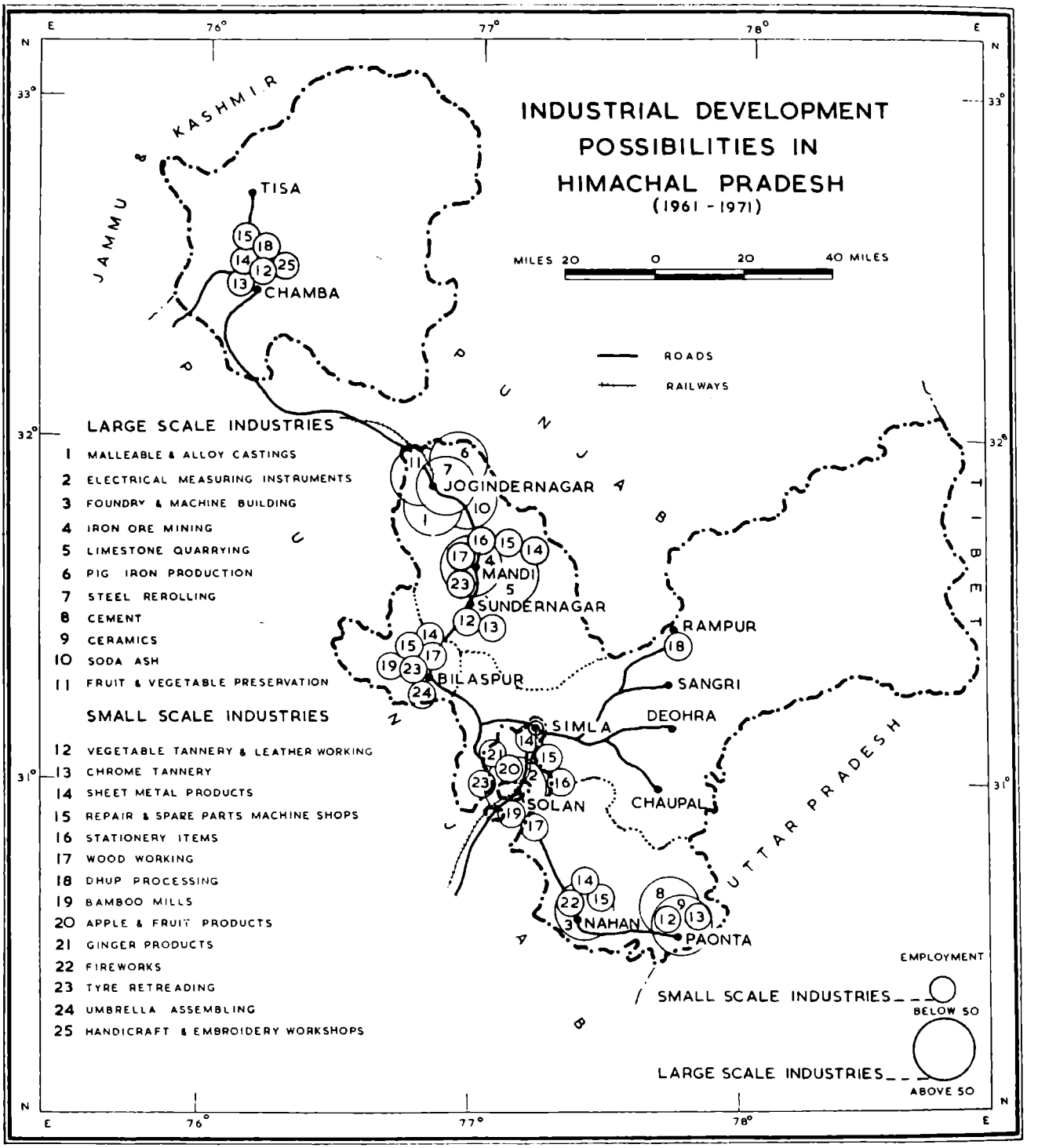
11.23 Common facilities for electroplating, case hardening, dyeing and so on should be provided both at the industrial estates and separately in the other major towns. Subsidized tools and equipment are helpful, but their distribution should be planned so as to make them widely and easily available.

11.24 One of the basic facts to be borne in mind is that the artisan is both an entrepreneur and a craftsman. These multiple activities limit his specialization and ability to secure efficiency in techniques. He has an exaggerated respect for traditional and practical methods, and can ill afford expenditure on measures that might not lead to quick returns. He should, therefore, be convinced of the importance of management techniques through education and training. Here lies the value of the cooperatives and production-cum-training centres. It is, therefore, necessary to strengthen and expand both these instruments of development.

11.25 The crude tools of the artisan and his techniques of production have affected his productivity and the quality of output. To this category belong the blacksmith's anvil and hammer, the potter's wheel and the village *ghani*. The replacement of these primitive tools takes time and a hasty replacement may upset the employment structure. Replacement on an adequate scale may take 15 years and here again the cooperatives could be used to assist such replacement.

11.26 Another problem affecting the Himachali small entrepreneur relates to raw materials. Its non-availability at low prices affects the quality and the volume of the output. Industrial cooperatives, which can make bulk purchases or government-owned raw material pools should be started on an experimental scale so as to ensure steady supply. An organization to purchase raw materials would be very helpful, specially, in inaccessible areas.

11.27 Better designs would increase competitive efficiency and would create wider markets. In addition to the design centre set up for the present at Mandi, other new centres should be established at one or two important towns during the Third Plan. Increased facilities may also be made available in the form of emporia and sales shops.


INDUSTRIAL DEVELOPMENT POSSIBILITIES IN HIMACHAL PRADESH
(1961 - 1971)
MILES 20 0 20 40 MILES
ROADS
RAILWAYS
LARGE SCALE INDUSTRIES
1 MALLEABLE & ALLOY CASTINGS
2 ELECTRICAL MEASURING INSTRUMENTS
3 FOUNDRY & MACHINE BUILDING
4 IRON ORE MINING
5 LIMESTONE QUARRYING
6 PIG IRON PRODUCTION
7 STEEL REROLLING
8 CEMENT
9 CERAMICS
10 SODA ASH
11 FRUIT & VEGETABLE PRESERVATION
SMALL SCALE INDUSTRIES
12 VEGETABLE TANNERY & LEATHER WORKING
13 CHROME TANNERY
14 SHEET METAL PRODUCTS
15 REPAIR & SPARE PARTS MACHINE SHOPS
16 STATIONERY ITEMS
17 WOOD WORKING
18 DHUP PROCESSING
19 BAMBOO MILLS
20 APPLE & FRUIT PRODUCTS
21 GINGER PRODUCTS
22 FIREWORKS
23 TYRE RETREADING
24 UMBRELLA ASSEMBLING
25 HANDICRAFT & EMBROIDERY WORKSHOPS
TISA
CHAMBA
JOGINDERNAGAR
MANDI
SUNDERNAGAR
RAMPUR
SANGRI
BILASPUR
SIMLA
DEOHRA
CHAUPAL
SOLAN
NAHAN
PAONTA
JAMMU & KASHMIR
UTTAR PRADESH
TIBET
EMPLOYMENT
SMALL SCALE INDUSTRIES
BELOW 50
LARGE SCALE INDUSTRIES
ABOVE 50
E 76° 77° 78° E
N 33° 32° 31° N

Industrial Cooperatives

11.28 For broadcasting these facilities, the cooperative societies afford the best medium. Industrial cooperatives for supplying raw materials and marketing the finished products have been successful elsewhere. They might, however, take a little longer time to succeed in Himachal due to the backward state of the economy. A beginning, however, should be made. For the present they would require considerable finance and technical and administrative assistance. During the Third Plan the Territory should take the lead in establishing and running these institutions by contributing a large portion of the share capital, subsidizing the running cost of the societies and also the cost of the tools and equipment supplied to them.

11.29 It may not, however, be necessary to extend all facilities to every society. Generally the attempt should be to make the industrial cooperatives the means of developing the small and cottage industries taking advantage of the lead of the Administration. It is difficult to suggest the number of such industrial cooperatives that will have to be started during 1961–66, but approximately about 150 may be necessary, i.e., a sizeable outlay will go to the starting of the societies and providing them with finance.

11.30 Training centres in the weaving of woollen goods may be established, particularly in Chamba and Mahasu; one dye house in each of the districts could usefully provide common facilities and also facilities for marketing goods from the village or the collecting centre to the market in the principal towns.

11.31 In the case of the sericulture industry, which is ideally suited for Himachal Pradesh, nurseries and farms could be encouraged by making them subsidiary to agriculture, and by providing training and equipment for better reeling and weaving.

11.32 The Third Plan should encourage the shift to new types of products. Marketing research and market surveys should be taken up to facilitate this changeover.

Industrial Possibilities in 1961–71

Determinants of Industrial Development

11.33 The establishment of industries is determined by a number of factors, although all of them are neither of equal importance nor found together even where such industries are well established, as, for instance, in Germany and U.S.A. The major determinants are:

(*i*) Availability of raw materials in adequate quantity and of required quality at competitive prices e.g., metallic minerals for producing iron, steel and aluminium;
(*ii*) The availability of adequate and cheap electric power;
(*iii*) Continuous supply of the relevant fuel and water within economic distance from the raw material;
(*iv*) Adequate and economic transport facilities;
(*v*) Facilities for the economic disposal of by-products and effluents;
(*vi*) Markets for the finished goods;
(*vii*) Suitable climatic conditions;
(*viii*) Sufficient capital; and
(*ix*) Availability of local skill is an additional advantage.

Mineral Resources

11.34 Himachal Pradesh has the reputation of possessing considerable supply of minerals, but as no detailed survey has yet been made, the present knowledge of the resources is very limited. The first and most essential step to take, therefore, is immediately to carry out a detailed survey of deposits and reserves.

11.35 The Territory has no advantage in respect of coal, oil and other fuels, which have to be imported over long distances. Power is inadequate, though possibly by 1968–69 sufficient supply may be available from Punjab. Communications too are unsatisfactory, motorable roads being inadequate and poor in quality, and railway facilities are practically non-existent. Climatic conditions, however, are not unfavourable. The requisite capital may also be forthcoming.

11.36 Broadly, the proposals for new industries are decided under five heads, namely, chemical, engineering, forest-based, agro and miscellaneous groups. Each of them is discussed separately for large and small units.

Chemical Industries (Large Units)

11.37 *Soda Ash :* The richest mineral found in Himachal Pradesh is rock salt which is the base for soda ash. Soda ash is a key heavy chemical which is required by other important industries such as glass, soap and pulp. It would be evident from the table below that the output of soda ash in India is a fraction of that in advanced countries and about half of what the country needs. Currently there are two plants in India producing the chemical and along with three more units which are under erection, the total output capacity by 1961 would be 3,64,000 tons.[1] Although this quantity will meet the current demand, it would be inadequate for the inevitable increase in consumption consequent on the rapid industrialization of the country as the likely demand at the end of the Third Plan would be 600,000 tons and by 1971, one million tons.

	Production of Soda Ash (thousand tons)				*Imports of Soda Ash into India*	
Year	*India*	*U.S.A.*	*Japan*	*Year*	*Quantity* (thousand tons)	*Value* (Rs. lakhs)
1954	48	4,180	590	1955	60·9	167·5
1955	77	4,363	632	1956	88·6	196·5
1956	81	4,443	740	1957	84·7	216·0
				1958	50·8	106·9

[1] Composed as below:

Existing capacity	111,000
Expansion	81,000
New units	172,000

11.38 Himachal Pradesh has natural advantages regarding the basic raw material. Salt is plentiful[1] and adequate supplies of limestone, power and water can be made available. Coal, however, has to be imported over long distances to the plant site from outside the Territory. A plant with a capacity of 6,000 tons is feasible. The outlay would be about Rs. 3 to 3·5 crores and it will give employment to approximately 1,000 persons. Jogindernagar, which is only 23 miles away from Mandi, and, which is also a railhead, appears to be a good location for the setting up of soda ash plant; but further investigation is desirable before finalizing the site.

11.39 *Cement Manufacture.* Himachal Administration is very keen to set up a cement plant in the Pradesh. But its economic prospects do not seem to be bright at present. Although there are adequate deposits of the chief raw material, limestone, the cost of transporting it from the quarries to the likely cement plant centre at Rajban would be heavy. The industry also requires other raw materials such as shale or clay, gypsum, coal and water. The nearest railhead is 45 miles away. The investment required for a 700-ton cement plant per day would be approximately Rs. 2 crores. The cement industry would perhaps help the Territory with better roads and houses. The cost of extending the railway line to Rajban from Jagadhari would be approximately Rs. 1·8 to 2.0 crores. The total investment may, thus, be of the order of Rs. 4 crores, which will not be worth making particularly because Uttar Pradesh, one of the neighbouring States, is likely to start a large plant at Dehra Dun which will produce cement cheaper than will be possible at Himachal Pradesh. However, if coal from Jammu and Kashmir could be made available at Rajban for about Rs. 20–25 per ton and sufficient power is available it should be possible to set up a cement factory at Rajban some time in the future.

11.40 *Alcoholic Beverages.* Favourable climatic conditions and availability of raw materials create suitable condition for manufacturing alcoholic beverages especially in the Chini area, where a lot of fruit goes waste. Cider can be made from apple juice for which there is a good foreign market. Good fermented apple juice can be made from apples. The products of the brewing industry would have both national and international markets. There are already two units, one in Solan and another in Kasauli. Their expansion is feasible but this depends on the prohibition policy as affecting the internal market, while the scope for export depends on the production of high quality liquors. Though it is desirable to start new plants during 1961–66 it is even more necessary to make an attempt to improve the quality of the existing product and raise it up to foreign standards. During 1966–71 further expansion and setting up of more new units may be reviewed.

Chemical Industries (Small Units)

11.41 *Fruit Preservation.* Fruit preservation industry is eminently suited to Himachal Pradesh in view of its unique climatic and topographical advantages. One fruit preservation plant is being set up shortly at Jogindernagar (Table 36) and two more medium-sized plants could be started during 1961–66, one each in Mahasu and Chamba districts. Power and fuel are relatively unimportant factors in this industry, but detailed investigations in the context of raw materials and transport are necessary before finalizing location and capacity.

[1] Vide Chapter on Minerals.

11.42 *Lime Burning.* There are large deposits of limestone in Sirmur and Mandi districts. Limestone is one of the basic minerals for a number of industries such as cement, heavy chemicals, soil conditioners, paper and pulp, etc. Lime burning requires small capital, but as a low value and heavy weighted mineral it cannot stand high transport costs. Large scale quarrying and transport by ropeways are likely to reduce its cost. Machinery for mining 1,000 tons per day would cost about Rs. 2 lakhs. Before setting up a lime burning plant, it is advisable to make a chemical analysis of the Himachal Pradesh lime; and if the results are encouraging a plant might be set up at Sataun. This step would also help in taking decisions regarding other possible limestone based industries.

11.43 *Ceramics.* Small scale plants for ceramic wares have some scope in Himachal Pradesh. Deposits of the main raw material and china-clay are reported in Himachal Pradesh; but their quantity and quality are yet to be ascertained. Transport, power and fuel supplied are limited. There is a local market for low tension insulators, which the plant can produce. Enquiry into the nature of the deposits may be taken in hand during 1961–66 to base decision to set up a few units.

11.44 *Khandsari Sugar.* The industry has two major problems: (*i*) inadequate finance and (*ii*) low sugar recovery rate. The Khandsari plants are small with low capital and high labour-orientation. In the Third Plan period adequate financial and technical aid should be made available to enable the recovery of a larger percentage of sugar which will increase the output of Khandsari sugar by 50 per cent. The cooperative factory at Paonta is to be expanded.

Engineering Industries (Large Units)

11.45 *Integrated Iron and Steel Plant.* Iron ore, found in Mandi district, is suitable for concentration. The reserves are about 60 million tons. The metal content is low, being about 35 per cent and the ores have to be beneficiated. Beneficiation is justified only where high grade ores are inadequate or regional demand for steel is large or good sources of metallurgical fuel and power are found in the vicinity or if the ore has some special qualities for foundry use.

11.46 Outside Himachal Pradesh, but within the country, there is sufficient supply of high grade ore which will last about a century and a half, assuming the demand for steel at 25 million tons by 1976. The annual regional demand for rolled steel in Himachal Pradesh is about 2,000 to 3,000 tons, a volume too small for establishing a minimum economic-sized integrated plant. Although transport is poor, the freight charges do not adversely affect the consumers of steel because of price fixation. The Territory does not possess adequate fuel resources to attract metallurgical industries. The quality and quantity of coal deposits are not known. Power development, which should normally precede industrial expansion, is yet to take place. For these reasons, an integrated iron and steel mill, even of a small size, is not feasible.

11.47 *Pig Iron Plant.* The quality of the iron ores is particularly good for the production of foundry grade pig iron specially because of the lower sulphur and phosphorous content that they have. Pig iron, no doubt, can be produced in the Territory at reasonable cost, but the main problem is one of utilizing the output, partly because of transport difficulties and partly

because there is no adequate local demand. There is, however, a market in the neighbouring States. The projected demand and output for all-India is as below:

	1960–61	*1965–66*	*1970–71*
		(Million tons)	
Demand	1·26	2·33	4·00
Capacity	0·99	1·60	2·72

In view of the high quality of the iron ore in the Territory and the unfulfilled demand for pig iron in India in the next decade, a plant to produce foundry grade pig iron with an annual capacity of 30,000 tons can be set up at Jogindernagar which is a railhead.

11.48 *Rolled Sections, Bars, Rods and Sheets Plant.* Possible industries based on other metallic minerals like bauxite, copper and lead are ruled out at least during 1961–66 because of the lack of information about the deposits. The allotment of steel for Himachal Pradesh in 1958–59, was as shown below:

	Tons	*Per cent*
Heavy and light structurals	111	5·25
Sheets, block, galvanized, etc.	927	43·70
Plates	5	0·05
Bars and rods	1,067	51·00
	2,110	100·00

SOURCE: Iron and Steel Controller's Office.

By 1971, the demand for bars and rods will be approximately 10,000 to 12,000 tons — a quantity which will be sufficient for consideration about the installation of a re-rolling mill. Such a mill is already being contemplated in the private sector, but if this project fails to materialize, the Administration itself should establish a plant. This may be reviewed in the Third Plan. The mill would produce bars, rods and light structurals. The best location is Jogindernagar. A sheet mill requiring a large outlay is not recommended because of limited demand.

11.49 *Nahan Foundry.* This is a large engineering establishment which produces cane crushers, flour mills, agricultural implements and castings. The current turnover is worth Rs. 20 lakhs and the units gives employment to 600 persons. Recently production has been diversified so as to include electric motors and centrifugal pumps. Every item of raw material is imported, and the nearest railhead is 36 miles away. A nearer railhead, 11 miles away at Rajban, might reduce costs. In-plant training, more and efficient equipment, and, greater mechanization would help increased production. Some of these modifications are being implemented. The foundry can be expanded by 1971 so as to produce finished industrial machinery and to provide castings,

forgings and other intermediate products valued at Rs. 150 lakhs, i.e., about 15,000 tons. Even this expansion would leave a large leeway to be made up still as seen below:

ESTIMATED DEMAND FOR INDUSTRIAL MACHINERY (ALL-INDIA)

(Rs. crores)

	1965–66	*1970–71*
Estimated demand	300·0	500·0
Output in 1958	7·1	..
Imports in 1958	188·9	..

11.50 *Malleable and Special Alloy Iron Castings Plant.* The demand for malleable castings, arising from pipe fittings, insulator fittings, railway wagons, automobiles, cycles, industrial machinery, etc., in 1961–71 for the whole of India is estimated as shown below:

Year	1961	1966	1971	1975
Tons	22,000	37,000	64,000	100,000

The present capacity in the country is 10,800 tons. There is, therefore, considerable scope for more than one new plant and one unit of 5,000 tons capacity may be established at Jogindernagar.

Electrical Instruments

11.51 The demand for products such as ammeters and voltmeters is directly influenced by the expansion in the power generation in the country which may be projected as under:

	1960–61	*1965–66*	*1970–71*	*1975–76*
Power generating capacity (Mill. kW)	6·9	11·4	22·0	33·0
Corresponding value of instruments (Rs. crores)	34·5	57·0	110·0	165·0

Annual requirements of electrical instruments for power stations alone will be Rs. 4·5 crores during 1961–66, Rs. 10·6 crores during 1966–71 and Rs. 11 crores during 1971–76. One unit may be set up during 1961–66 with a capacity of Rs. 1 crore worth by 1970–71. Local skill is available and may be developed. The climate with its slight temperature variations is excellent for this kind of plant. Foreign collaboration will be necessary as it is a specialized industry.

Engineering Industries (Small Units)

11.52 *Gun Manufacturing Units.* There are three gun manufacturing units in Mandi. Their problems are partly administrative and partly structural. The former relates to difficulties in obtaining licences for enlarging production, and to the shortage of mild steel. The organizational problem refers mainly to their inability to change their production techniques and their products. Whether gun making should continue in private hands could be a matter of policy, but that

apart, the existence of traditional skill in Mandi and Nahan could be profitably diverted to allied lines of production such as chucks, surveying instruments and precision tools. Such a changeover would mean some hardship to the units during the transitional years — 1961–66 — but by 1965–66, the transition would probably be complete. The Government should assist with loans, technical training, power and equipment to make the transition less painful.

11.53 *Sewing Machine Unit.* The sewing machines repairs and replacements unit located in Bilaspur is a very small one with a capital of Rs. 2,500. It can expand considerably if encouraged to diversify production.

11.54 *Bicycle Assembling.* The bicycle assembling and parts manufacturing factory at Nahan has stopped work for a decade mainly because of the shortage of steel. With increased output of steel in the country, the industry can be revitalized and placed on a decentralized basis as in Japan.

11.55 *Domestic Utensils, Buckets and Trunks Plant.* The market for sheet metal units is indicated by the Himachal Pradesh imports of domestic utensils, buckets, etc:

	Domestic utensils	*Buckets, etc.*
	(Rs. lakhs)	
1954–55	4·20	0·88
1955–56	6·99	1·20
1956–57	13·92	2·39

Five sheet metal units, one in each district, should be started during 1961–66. The equipment for each would cost about Rs. 1·8 lakhs but all the equipment need not be purchased immediately. This would provide employment to about 20 to 30 workers in each unit.

11.56 *Machine Shops.* The idea of establishing machine shops, for the work of maintenance and repair as well as the manufacture of small components, has not so far taken root in the Territory because of the limited use of machinery. The greater use of automobiles, sewing machines and light structurals may be expected to increase the demand during 1961–66. The traditional skill of the gun-makers of Mandi is already available. Five small machine shops one each in Chamba, Mandi, Bilaspur, Nahan and Solan could, therefore, be established in the Third Plan. Each would require an outlay of about Rs. 30,000 and will employ 8 to 10 workers. The available skill can be developed and the markets so expanded that by 1971, more and larger shops with an investment of Rs. 40 to 50 lakhs would be feasible.

11.57 *Small Foundries.* Apart from the Nahan foundry, ferrous casting is confined to local blacksmiths. The casting of pipe fittings, machine parts and similar products could be introduced but the industry should follow up the establishment of machining units. A ferrous foundry should be set up in Bilaspur in 1961–66 and five small non-ferrous foundries should be attached to the recommended sheet metal plants.

Forest-based Industries (Large Units)

11.58 *Stationary Saw Mill.* This is one of the few large forest industries that is feasible. For a unit with a capacity of 5,000 standards and 2,000 tons a year, the investment would be about Rs. 10 lakhs, with an employment potential of 60 persons. The foreign exchange component of the investment will be Rs. 4 lakhs, which might not be easily available.

11.59 *Particle Board and Composite Wood.* Two other allied industries are the manufacture of particle board and of composite wood such as plywood and veneered chip board (Table 34). Investment needed for a particle board plant of 5,000 tons capacity is about Rs. 13 lakhs. The platen press type, which involves a more advanced technique, may require 75 to 80 per cent of the outlay in foreign exchange, which, under present conditions, may not be possible. A composite wood plant of 3,000 to 5,000 tons capacity would need about Rs. 8 lakhs. The required raw material, deodar and other coniferous wood, is available in the Territory, but in view of the comparatively large outlay it is desirable to survey particularly the market, location and transport aspects.

11.60 *Pulp and Paper.* This is the third of the large scale forest-based industries which is possible in the Territory provided extraction is reorganized. Paper production in India in 1959 was 273,000 tons. The per capita consumption of paper is about 2·24 lbs. per year in India, as compared with 380·80 lbs. in U.S.A. and 67·20 lbs. in Europe. The market for paper is both large and expanding.

11.61 The consumption of paper in Himachal Pradesh is only 588 tons, of which newsprint accounts for 136 tons. With increased outlay on education and with growing population, the demand for paper would necessarily grow rapidly.

11.62 There is no paper mill in Himachal Pradesh in spite of its likely cost advantage and the plentiful supply of raw materials estimated as below:

Coniferous	290,907 tons
Broad leaves	9,486 tons
Bagasse	Nil
Bamboo	1,500 tons
Bhabar grass	18,000 tons

11.63 The feasibility of a paper pulp plant in Himachal Pradesh has to be studied in terms of demand in the country and the local availability of raw materials, and the burden of economic overheads. As will be seen from the table below, till late India has been meeting considerable portion of its paper requirements by imports. Although the position has improved since the First Plan, still in 1957–58, the country imported 950 tons of paper.

Year	*All-India*	
	Demand	*Imports*
	(thousand tons)	
1955–56	1·91	1·28
1956–57	2·36	1·08
1957–58	2·39	0·95
1960–61	4·00 (Est)	

11.64 The price of bamboo is about Rs. 80 per ton and of sabai grass Rs. 120 per ton as compared with the price of pulp, namely, Rs. 700 to Rs. 900 per ton. The industry faces two major difficulties: that of transporting the raw material to the factory, if located away from the source; or that of transporting pulp and paper, and that of providing power, fuel and labour if the plant is situated in the raw material growing area.

Forest-based Industries (Small Units)

11.65 Small units of forest-based industries do not require a large investment or high technical skill and are, therefore, immediately practicable. They are better suited than large units for a region with low transport development, difficult terrain and dispersed population.

11.66 *Fruit Packing Boxes.* The market in the local horticultural areas is growing mainly for export. The number of boxes now exported is about 200,000 and, including those utilized for supplying local markets, the current annual demand for boxes is approximately 225,000. With the shift in land use to fruit culture, the demand for packing boxes will grow. With the increase in the volume and variety of fruits grown, improvements in transport and marketing, leading to easier flow of fruits, the need for better packing boxes is likely to increase by 50 per cent during 1961–66 and 80 to 100 per cent by 1966–71.

11.67 At present the boxes are crudely made and much raw material (wood) is wasted; for example, under the current sawing technique, the percentage of wood conversion for use in boxes is 50 to 70, whereas improved slicing techniques would increase the conversion percentage to 90. Two box making factories using the improved techniques should be established, one in Mahasu and the other in Chamba district. The former may be started at the beginning of the Third Plan and the latter about the middle or close of the Plan. The outlay would be about Rs. 30,000.

11.68 *Wood Turnery Goods.* The most important of these lathe turned products is sewing thread bobbins, which have an international market. Although Himachal Pradesh has suitable hardwood, yet, to supply the national and the international markets does not appear immediately feasible because of technical and marketing difficulties. Before the industry is introduced, it is desirable to conduct a market survey.

11.69 The production units may be either small or of the cottage type, and the outlay might range between Rs. 1,000 to Rs. 15,000 per unit, depending mainly on the size. In view of the employment needs and the necessity for wide dispersal on account of the terrain, the units may be of smaller size, perhaps with an outlay of Rs. 1,000 to Rs. 5,000. With proper training, adequate power supply and efficient marketing cooperatives, the small units should be able to hold their own in the next decade. The likely location for setting up the industry is Chamba and/or Mahasu.

11.70 *Pencils, Pencil Slates, Foot-rules, Pen-holders and Toys.* The demand for pencils is on the increase and would grow with the spread of education. There is scope for replacing imported slate and even for entering the international market, but, perhaps, not earlier than the Fourth Plan period or even later. Himachal Pradesh appears to have quite a few varieties of wood, like deodar, which are suitable for pencil slates. The industry does not require a high degree of mechanization, nor could it be of the size of cottage or handicraft units. It could at best, be small and moderately mechanized and be operated by specially trained workmen. The outlay varies according to the size of the units but broadly it would be as indicated below:

Pencil making	Rs. 1,35,000
Pencil slates	Rs. 80,000
Pencil graphites	Rs. 64,000

Two small units, one in Solan and the other in Mandi, are also feasible. The latter can produce other school requirements such as foot-rules, pen-holders and toys. The plant should be medium sized with an investment varying between Rs. 1·3 lakhs to Rs. 4 lakhs.

11.71 *Tooth Picks and Ice Cream Spoons.* The industry could be of the small variety. The machinery required are inexpensive and could, probably, be produced in India. The required wood is locally available. The outlay would be about Rs. 10,000 to Rs. 50,000 depending on the size of the unit and the degree of mechanization.

11.72 *Furniture Making.* Although, at present, the demand for furniture is limited because of low incomes and traditional modes of living, a growth in demand may be anticipated towards the end of the Third Plan. The hardwood required for furniture is available in plenty. It should be possible to create an indigenous industry in which individual small entrepreneurs and the larger ones can both operate. The success of the units depends on modernizing, furnishing operations and improvement of designs. A special study of the demand, design, location and specific costs is necessary before more concrete steps are taken. The approximate outlay for a medium sized factory would be Rs. 3 lakhs and the likely location could be in Mandi or Mahasu district.

11.73 Two joinery plants are also possible. In view of the growing construction activities, standardized doors, windows, panels and partitions appear to have scope for development. The demand, at present, is restricted and there are also transport difficulties. Very broadly, the investment required would be Rs. 50,000 to Rs. 1,00,000 for a plant with an annual output of 1,000 doors and 3,000 windows, and alternatively Rs. 10,000 to Rs. 50,000 for a manufacturing plant depending on its size.

11.74 *Sports Goods Plant.* Sports goods have a large and growing demand but any new unit will have to compete with established units in Punjab and elsewhere. Although the investment involved in a medium sized unit is about one lakh rupees and the required wood is available, the establishment of this industry needs further investigation, and may not be feasible in the next quinquennium.

11.75 *Minor Industries.* It is also practicable to develop some minor industries producing bamboo frames, floor mats, curtain and other utility articles. These could be located particularly in Bilaspur and Solan areas. At present, only bamboo baskets are produced by hand process and for the local market. The hand process is very costly, for a machine performing the same process is 70 times more efficient and far less expensive.[1]

Agro-based Industries (Small Units)

11.76 *Spinning and Weaving.* One of the assets of Himachal Pradesh is the availability of wool, though of inferior quality. At present, approximately 1·83 million lbs. of wool and 89,000 lbs. of goat hair are produced. While the necessity for improvement in quality should be kept in view, the available material can be used to produce serges and hosiery yarn, carpets and blankets. The possibility of expanding the market within the Territory even, is indicated by the value of imports of woollen goods:

Year	*Value* (Rs. lakhs)
1954–55	4·4
1955–56	5·4
1956–57	12·2

[1] Timbering is dealt with under forest utilization.

There is hardly any production of yarn. Weaving is done, to a considerable extent, by handlooms. Two mechanized and power-driven spinning and weaving plants, one in Mahasu and the other in Chamba, appear feasible during 1961–66. The size of plants should be small.

11.77 *Shawls and Woollen Goods Plant.* This unit situated in Chamba has both local and regional markets. The major obstacles in the way of its expansion are: (i) the dependence on the import of finer yarn from the Punjab, (ii) need of relatively large working capital (particularly because the sales are seasonal), and (iii) the fact that the machinery and other equipment used at present, are not up-to-date. If the industry is to develop, an attempt must be made to breed better wool yielding sheep, but as there are some natural limitations, as in the production of *pashmina* wool, the dependence on imported raw material will be inevitable, at least, during the next decade. Demand in wider and particularly foreign markets has to be developed to neutralize the seasonality of existing markets. In the meantime, temporary financial aid will have to be extended. Finally, powerlooms may be introduced. These steps would enable the current output of 1,500 shawls to be increased by 50 per cent by 1961–66 and to be doubled by 1971. The additional working capital needed would be about Rs. 1 lakh and the investment on plant about Rs. 50,000. Employment opportunity is likely to increase for about 80 to 100 persons.

11.78 *Hosiery.* The demand for woollen hosiery comprises civilian and army needs. Hosiery has a good and expanding market both in rural and urban areas. The industry can also provide part-time employment during the non-agricultural season, specially to women. The industry could be in rural areas — a cottage one, using hand hosiery machinery, and in urban areas a small power-driven one. The investment varies with the type of product and the size of output. Thus a pull-over and sweater unit with capacity to process 20 lbs. of yarn could cost Rs. 3,750 and a hand sock unit in rural areas would cost Rs. 290. A survey of the demand for different types of goods in the Pradesh is required before the number, type and location of the units can be recommended. The most important step to be taken, however, would be to have locally spun thread.

11.79 *Ayurvedic Drugs.* The ayurvedic pharmacy at Jogindernagar is resource-based. This unit owned by the Administration supplies to hospitals run by the Administration. Production can be expanded by reorganizing the marketing methods and by employing new machinery.

11.80 *Leather Goods.* This is an industry with plenty of traditional local skill specially in Paonta, Sundarnagar and Chamba, but machine-made goods are underselling and throwing the local *chamars* (shoe-makers) out of the market. With better organization and technology, the industry has good scope for expansion and, thus, to meet the growing demand. The scope of markets for machine-made leather goods in Himachal Pradesh is indicated by imports:

Year	*Value* (Rs. lakhs)
1954–55	3·2
1955–56	5·3
1956–57	11·1

Raw material is plentiful. With a bovine population of 1·2 million, 90,000 carcases could be expected annually. Three vegetable tanneries, with leather finishing, polishing and sewing units

are feasible one each in Paonta, Sundarnagar and Chamba. The probable outlay would be Rs. 3 lakhs and it would provide employment to 80 to 100 workers in each unit.

Miscellaneous Industries

11.81 *Tyre Retreading.* In view of rapidly developing communications and larger motor traffic, retreading plants have good scope. Retreading facilities are not available now. The investment per plant is about Rs. 2,000 and one may be established first in Mandi and others towards the end of the Third Plan in Solan, Nahan and Bilaspur.

Chapter 12

Human Resources

MANPOWER

12.1 According to 1951 Census,[1] the population of Himachal Pradesh was 1·19 million, i.e., 0·31 per cent of the total population of India. The Territory had a density of 96 persons per square mile compared to 340 in Punjab, 598 in Madras and 285 in all-India. Difficulties of terrain and lack of economic opportunities coupled with a comparatively lower rate of growth, account for the thinness of the population. Bilaspur, with relatively large plain areas, has the highest density but hilly Chamba has the lowest. In Mandi and Sirmur, which have larger industrial employment and higher economic development, the density is higher and are 192 and 146 per square mile respectively. The largest district of Mahasu, with extensive tracts under forests and alpine pastures, has a density of 64 persons per square mile.

Lower Rate of Population Growth

12.2 A striking feature about Himachal Pradesh is the great variation in the rate of growth of the population. While part of the explanation for this phenomenon might be defective reporting, the lower rate of growth compared to all-India is also a fact as will be seen from Table 39.

12.3 The lower rate may be explained by lack of adequate medical facilities in the past. Incidence of venereal diseases had also had its toll of human lives. There has, however, been a significant fall in death rate since 1955. Medical facilities have been increased and are likely to contribute to lower infant mortality. All these are bound to push up the natural rate of population increase.

12.4 During 1941–51, Bilaspur had the maximum rise of 14.3 per cent of its population and Mandi the lowest, 2·3 per cent. The net growth of population in Sirmur was also high but in other districts it was lower than the average for the Territory. It is again difficult to explain these regional differences except in terms of defective enumeration.

12.5 There are only 923 women to every 1,000 men in Himachal Pradesh as compared to 947 women to 1,000 men in all-India. The lower sex ratio is a significant factor in the lower birth rate. Males are evenly distributed among the districts except Sirmur, where the ratio between males and females is 56: 44.

12.6 The lower rate of growth and the density of population create a peculiar manpower problem which does not put the Territory in an advantageous economic position. These features themselves have been the result of the unfavourable man-material resources relationship. Out of

[1] According to provisional Census (1961) estimates, the population of Himachal Pradesh has risen to 1·35 million. In accordance with the latest administrative decision, the thinly populated border areas in Mahasu district have been constituted into the separate Kinnaur district. The density of population of Mahasu has now increased to 164.

the total land area of 2·30 million acres, only 0·68 million is sown with field crops giving a per capita figure of 0·6 acre, lower than the all-India average of 0·8 acre. There are little known mineral resources and the per capita value of production in 1955–56 was a little less than quarter of a rupee. The total per capita annual income from primary sources was estimated at only Rs. 122.

12.7 Another feature of the human resources position is the higher average longevity. In 1951, 54 per cent of the population was estimated to be in the age group 15–54, 34 per cent in 0–14 and 12 per cent above 55. Corresponding figures for all-India were 53·3, 38·3 and 8·3 per cent respectively. The reason for the difference lies in the climatic conditions of the area.

12.8 The population is predominantly agricultural; 93 per cent of the total population depends upon agriculture and the remaining are distributed in the ratio of 3: 4 between the secondary and tertiary sectors. Sirmur is most urbanized with 2·4 per cent of the population. The 22 square miles of urban area in the Territory has a density of 2,052 persons per square mile and the comparable figure for rural areas is 92.

12.9 All these factors have a bearing upon the existing and potential manpower conditions. Longevity of life makes for a higher working period, urbanization determines the rate at which technical education can be spread out and the present pattern of employment suggests the lines along which the supply of working force may be expected to press hard in the future.

Literacy

12.10 According to 1951 Census, six per cent of the total population was literate. In the school-going age group of 5–14, literacy was of the order of eight per cent. Although the Territory has shown a marked progress during the last decade, a large leeway remains to be made up before it catches up with all-India. Expenditure on education has a little less than trebled in the course of the First Plan, and the number of scholars has doubled. There is a large programme of technical training through the training-cum-production centres.

Employment

12.11 In terms of employment, factories accounted for 1,018 persons and small units for 30,402 workers. Even as recently as 1959 there were only 19 establishments with more than 10 workers in each, employing in all 1,845 persons. Mahasu had seven of these units, Mandi six, Sirmur four, Chamba two and Bilaspur none. Districtwise the employment in these registered factories was as under:

District	*Number of persons employed*
Sirmur	770
Mahasu	755
Mandi	225
Chamba	95
Bilaspur	Nil

Only five of these 19 units employ more than 100 persons. The Nahan foundry is the largest single employer with 525 workers. The transport workshop at Taradevi has 125 employees. Employment in the Solan brewery and the Kasauli distillery is 400 and 100 respectively, and it is 150 in the rosin and turpentine factory at Nahan.

12.12 Due to the widely varying agro-climatic conditions and the seasonal characters of the working period in many parts of the Territory, the employment problem is complicated. Paddy-sowing and harvesting, which generally induce women labourers to work, take place in different months in different parts of the Territory. This fact gives rise to pressure of demand for labour during the season and draws upon child labour over the Territory and also encourages immigration, including the return of persons normally employed outside the area. It also causes under-employment or unemployment during the off-season. On an average, an adult male is employed as a wage earner for 106 days in agricultural, and for 112 days in non-agricultural jobs in the year.[1] And the corresponding figures for women workers are 109 and 51 respectively. An adult male-earner was unemployed for 49 days in the year and for the remaining 98 days, he was self-employed. Unemployment position was worse with women, employed as they were only for 160 days in the year. Roughly, in 1955–56, there were full-time employment opportunities for a little less than 70 per cent of the labour force.

12.13 Besides seasonal factors, the higher incidence of under-employment among men can be traced to the large working force, participation by women on a large scale and the predominance of agriculture. The ratio of working force to total population (Table 12.2) is nowhere so high as in Himachal Pradesh. Women workers in the Territory number 69 as against 54 in all-India. Of persons engaged in economic activities women form 24.4 per cent.

12.14 In 1951, agriculture employed 89·9 per cent of the total working force. Production other than cultivation employed 5·7 per cent, Commerce 1·3 per cent, Transport 0·5 per cent and Services 2·7 per cent only.

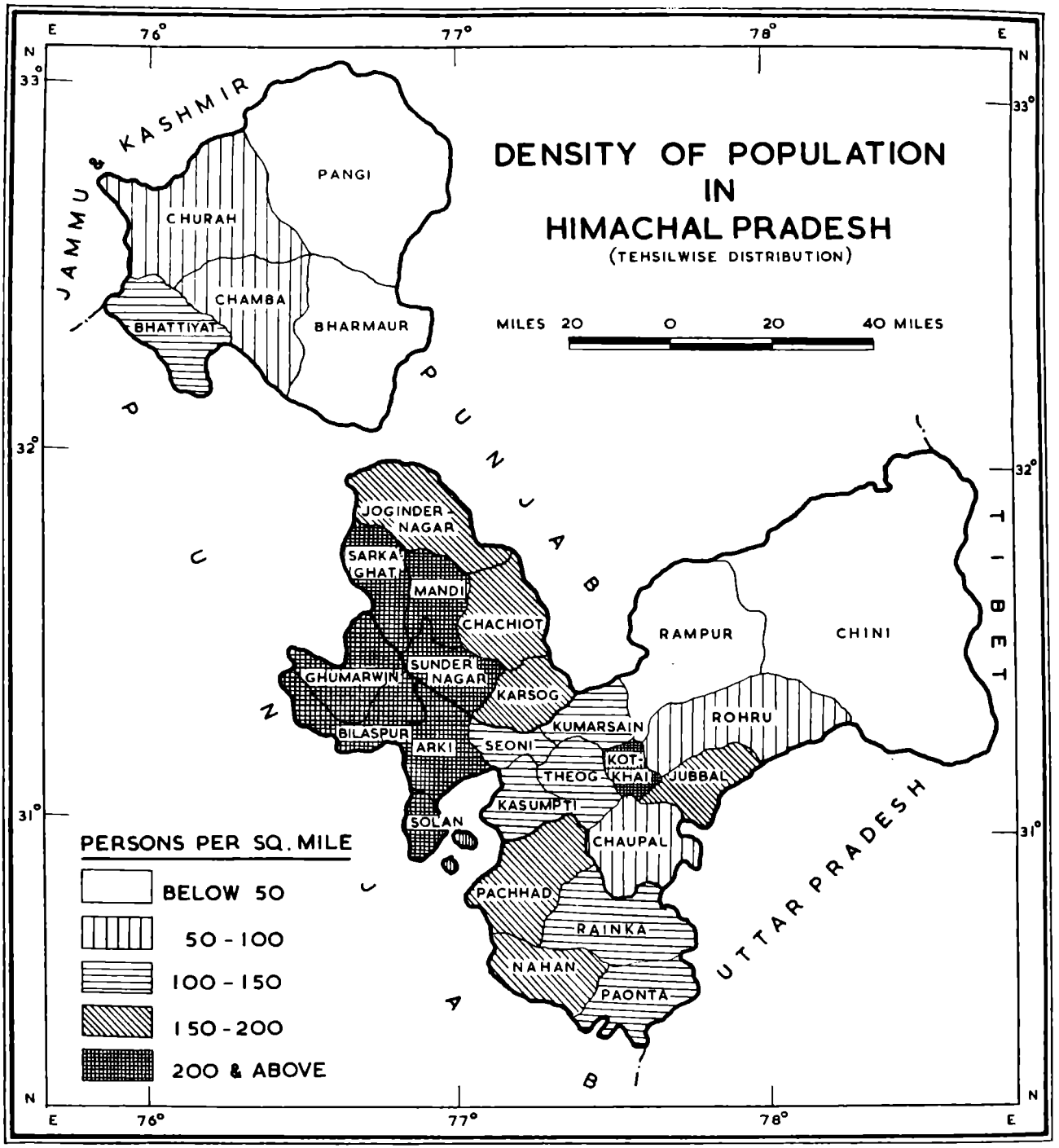
Participation Rate

12.15 The district of Mahasu which has the largest population has also the highest participation rate which is 65·4 per cent. Bilaspur with a minimum of tribal population and its nearness to plain economies, where women labour is not common, has the lowest participation rate (45·6 per cent). For every 100 males in the eaner group there were 87 women earners in Mandi, 77 in Mahasu, 60 in Chamba and Sirmur and 36 in Bilaspur.

12.16 In 1951 the proportion of rural and urban earners in the working force was 97 : 3, and the participation rate was 60·2 per cent in rural areas and 42·6 per cent in urban sectors. However, there appears to be no correlation between the extent of urbanization and the participation rate in districts. Nor is there a correspondence between per capita availability of the cultivated area and the participation rate. Perhaps, social factors and traditions explain the regional differences.

12.17 The volume and pattern of income of the Territory at the end of the First Plan is estimated to have provided full time employment to 450,000 persons. The extent of under-employment may be inferred from the ratio between self-supporting persons and earning dependents which in case of Himachal Pradesh is 59 : 41. With a total adult labour force of about

[1] SOURCE: Report of the Agricultural Labour Enquiry Committee.


DENSITY OF POPULATION
IN
HIMACHAL PRADESH
(TEHSILWISE DISTRIBUTION)
MILES 20 0 20 40 MILES
JAMMU & KASHMIR
PANGI
CHURAH
CHAMBA
BHATTIYAT
BHARMAUR
PUNJAB
JOGINDER NAGAR
SARKAGHAT
MANDI
CHACHIOT
SUNDER NAGAR
GHUMARWIN
BILASPUR
ARKI
KARSOG
SEONI
KUMARSAIN
THEOG
KOTKHAI
JUBBAL
KASUMPTI
SOLAN
CHAUPAL
PACHHAD
RAINKA
NAHAN
PAONTA
RAMPUR
CHINI
ROHRU
TIBET
UTTAR PRADESH
HIMACHAL PRADESH
PERSONS PER SQ. MILE
BELOW 50
50 - 100
100 - 150
150 - 200
200 & ABOVE
E 76° 77° 78° E
N 33° 32° 31° N

650,000 in 1956, the approximate number of the effectively unemployed may be estimated at 200,000. As about 90 per cent of the working force is concentrated in agricultural pursuits, the pressure of under-employment is felt most in that sector.

12.18 Over the period, 1951–57, the population of Himachal Pradesh increased at the average rate of 1·3 per cent per year. And in view of the programmes of social services a rate of 1·5 per cent may be assumed till the end of the Fourth Plan period, giving an estimated population of 1·3 million for the year 1961 and 1·5 million for 1971. After adjusting for the changes in the sex ratio, the available working force in the year 1961 may be estimated at 710,000 and in 1971 at 776,000. The percentage of manpower to total population is expected to fall from 59·5 per cent in 1951 to 54·6 per cent in 1961 and 51·7 per cent in 1971. The changes in the health standards, socio-economic conditions, especially with regard to work-period, education and women's participation are expected to have little influence upon the estimates of the working force.[1]

Trends of Employment

12.19 It is difficult to classify the supply of labour by types of employment. On a general assumption that the trends of employment in different sectors of the Indian economy, during the period 1941–51, after adjustment to the lower rate of population growth would be true of Himachal Pradesh, the broad distribution may be estimated as below:

Potential Working Force
(thousands)

	1961	*1971*
Agricultural classes	637	697
Production other than cultivation	37	35
Commerce, transport and other services	36	44
TOTAL	710	776

12.20 Very approximate estimates of manpower requirements in 1961–71 are utilized below. On the assumption that the order of investment during the Third and Fourth Plans is expected to be Rs. 33·80 crores and Rs. 51·50 crores respectively, in terms of whole-time employment for all engaged persons, the backlog of 200,000 of effectively unemployed persons at the end of the First Plan might be reduced approximately by about 24,000 by 1971.[2] During the course of the Third and Fourth Plans the ratio of investment to employment generated is likely to be less, as the bulk of the expenditure will be directed towards land use and other surveys and the economic build-up. The capital-output ratio may also be expected to be a little less than

[1] The assumptions in these estimates are those made by the Central Statistical Organisation and the National Income Committee.

[2] This and the subsequent estimates are based on the assumption that local manpower for all types of jobs, skilled and unskilled, would be forthcoming.

double during the same period. The next two Plans will somewhat neutralize the natural rise in unemployment mainly due to fall in the participation rate but there would still be a backlog of unemployment. The bulk of the employment would be generated in transport, industries and services. The intensive nature of agriculture might also absorb some of the employable population but its role will diminish with the spread of the optimal use of the land for purposes other than field crops.

Training Programme

12.21 The problem of manpower will acquire new dimensions in course of the next decade. Whereas the surplus in manpower will continue in the primary sector, shortage of skilled labour will be experienced in the industrial sector. This shortage will be further aggravated if a programme of precision article production and handicrafts is undertaken in the Third and subsequent Plans. For a balanced programme, the Industries Department should prepare a long-term labour requirement schedule for guiding its training schemes.

12.22 Even during the course of the First and Second Plans pressure in demand was felt in most technical jobs, and development activities such as animal husbandry, forestry and community development reported lack of adequate staff. For this Himachal Pradesh is drawing upon the resources of the neighbouring States. The Pradesh should build up its own administrative and technical personnel adequate to meet its needs. The training programmes in the Second Plan were steps in the right direction but they were not adequate.

Employment in Tertiary Sector

12.23 Another sector of the economy where employment opportunities might develop is the tertiary sector, especially in the field of transport and tourist services. A phased programme of training persons to man these services is required. With all these efforts the economic structure of the Pradesh is such that full employment may not be possible in the near future and the current migration to the plains for employment purposes will have to continue and facilities should be provided to make the flow easier.

Tribal Problems

Scheduled Tribes

12.24 Five major tribes inhabiting Himachal Pradesh are Kinner, Gaddi, Gujjar, Pangwalla and Lahaula. Kinners are concentrated in the district of Mahasu, and Gaddi, Pangwalla, Gujjar and Lahaula in the district of Chamba (Table 41).

12.25 The backward population (Table 41) of Himachal Pradesh has not received the attention that it deserved. In 1956, the number of persons listed as belonging to Scheduled Tribes was 94,733 (Table 42).

12.26 There are certain areas in the Pradesh which are very inaccessible and have a backward population numbering over 17,000.[1] These two categories constitute 8·7 per cent of the entire population.

[1] Estimates have been made on the basis of 1951 Census.

12.27 Most tribals inhabit inaccessible areas. The terrain is difficult, and means of communication practically absent. During winter these places are snow-bound and cut off from the outside world. Approaches to these places are interspersed with high mountains, sometimes as high as 22,000 feet above the sea level. In case of Pangi sub-tehsil, the approaches are joined by a few passes that get blocked when it snows. Physical features of these areas have, contrived to keep them isolated. The break-up of this isolation will become a major problem to be tackled in 1961–66.

12.28 Himachal Pradesh and Assam prefer backwardness to be determined by the remoteness of the area, supplemented by tests of educational and economic needs of the people. The criteria of backwardness could also be purely on economic considerations and from this point of view the bulk of population of Himachal Pradesh is backward. Ninety-three per cent of them have an income equal to only Rs. 108 per annum. The problems of tribes should be viewed as those of specially distressed areas.

12.29 There has been no specific educational or socio-economic survey of the areas described as inaccessible and backward. But, it is generally believed that conditions of their inhabitants are as bad as those of the Scheduled Tribes. A detailed survey of the needs and development possibilities of these areas is desirable.

12.30 Scheduled Tribes have received care after the introduction of the Plans. Even earlier, efforts were made both by official and non-official agencies to study their problems, but these were rather restricted in scope. With the establishment of a separate Directorate of Social Welfare, work in Himachal Pradesh has commenced on a larger scale. But the information gathered so far is primarily qualitative, notwithstanding a few rough estimates.

Cultivable Land

12.31 In spite of the very low density of population in the areas inhabited by tribals — 13.2 per square mile in Chini, 49.2 in Bharmour and 11.4 in Pangi — the per capita availability of cultivable land is meagre. It is 0.40 acre in Chini, 0.34 in Bharmour and 0.57 in Pangi. The soil in most places is rocky and rainfall scanty resulting in very low crop yields. Even the crop season does not extend to more than three months in many parts. All the areas are deficient in foodgrains in spite of their being grown universally. Estimates made on the latest available statistics show that the Kinner-land grows two-thirds of its foodgrain requirements. It is likely that this estimated deficiency may be on the lower side in view of the higher food intake by these hardy people. In a few cases the food deficit is increased due to imported labour for forest work and road construction, who have also to depend on local supplies. The tribal people being largely tradition-bound in the method of their land uses, increase in food supplies can come about through a gradual improvement in agricultural techniques and freer imports.

Forests

12.32 In most tribal economies forests hold an important place. It is not so significant in Himachal Pradesh. In the three tribal areas, Chini, Bharmour and Pangi, the per capita availability of forest lands is 1.52 acres, 5.44 acres and 36.70 acres respectively. As these lands also include barren and unculturable tracts, the economic advantages of the area would be much smaller. In most areas the forests cannot meet even the requirements of firewood. Minor forest

produce, however, are important in *Kanaura* and *Pangwal* lands. Kinners have taken to the growing of dry-fruits also; but due to their backwardness, defective marketing practices and lack of transport facilities full advantage is not becoming available to them. Marketing is bound to improve with the opening up of areas. In the meanwhile dry-fruit growing could be encouraged in areas like Chini, Pangi and Bharmour.

Pasture Lands

12.33 More than forests, the pasture lands play an important role in the life of the tribal people. Definite steps towards improvement have already been taken and six pasture lands are being improved through the operation of welfare schemes. Most Gujjars make their living out of the sale of milk and milk products and Gaddies by the sale of wool. Churning machines and pasteurizing treatment should be made available to the community of Gujjars and training facilities should be provided for the manufacture of butter and ghee.

Animals

12.34 The animals owned by the tribes are weak, short-lived and of inferior breed. They get little feed except from grazing. The pressure on pasture lands is heavy. The number of animals has been increasing and no systematic programme of growing more grass has been instituted so far. The large number of animals have helped little because the breed is both inferior and deteriorating due to in-breeding. Besides, the milk yield of Gujjar cattle is adversely affected due to the constant movement of their owners. Seasonal movements of Gaddies result in heavy casualty among the sheep due to the difficulty of such journeys and also due to the outbreak of epidemics. The tribal welfare schemes should lay emphasis on sheep, horse and mule breeding. The quality of produce from animals is poor and the quantities are small.

12.35 Special attention should be paid to improve cattle. Efforts should be made to develop fodder and forage supplies. Cattle-rearing should be more of a commercial proposition than a way of living. This needs tribewise adjustment of the programme. Different tribes have different types of animals. Gujjars should have an improved variety of cattle and buffaloes. Research in cross-breeding yak and cattle would help Kinners, Pangawallas and Lahaulas. Gaddies need better types of sheep. A 10-year programme to prevent sheep in-breeding and to replace the present stock by improved varieties is required. There are also good prospects for setting up dairy units at Chanda.

Tribal Vocations

12.36 Among other economic pursuits, sheep-rearing is important with Gaddies and Kinners and cattle-rearing with Gujjars. These occupations provide the marketable surplus with which their requirements, including foodgrains, are met. But, as there is little specialization in these jobs, the economic advantage derived is very meagre. At present carding of wool is defective. The yarn is crude and marketing at the few fairs unremunerative. Excepting among Gujjars, wool-spinning and weaving are the most common cottage industries. Blankets made by Gaddies, '*Thobies*' of Pangawalla and '*Gudmas*' and '*Namdas*' of Kinners have already earned reputation. But the supply of these goods is decreasing, largely because the raw materials used are getting

short in supply, partly because the methods of production are crude and wasteful, and partly because the producers as they get uneconomic prices have little incentive to produce.

12.37 While the traditional spinning skill of Kinners, Gaddies, and Pangawallas should be encouraged, emphasis has to be on maintaining value of the products as handicrafts by the tribal people being supplied with cleaner and better quality yarn. Marketing societies should be arranged in the Kinnaur, Chini and Pangi areas. The opening up of a few collection posts at the headquarters of the Community Development Blocks and other central places dealing in the supply of raw materials and rations, and willingness to purchase the wares of craftsmen on specified prices could go a long way in rehabilitating this cottage industry. Provision for carpet-making, weaving and leather work will considerably help the rehabilitation of backward classes and scheduled tribes. It is encouraging that already four societies of Gujjars have been organized in Chamba district to improve their income and supplies. Scope exists for raising mushrooms and for herb culture, processing and packing of crude medicines and of growing vegetable seeds.

Tribal Arts and Crafts

12.38 Increasing inflow of factory-made goods is threatening to destroy tribal arts and crafts. As shifting the tribes to the lower regions where employment may be available is difficult, the solution is to introduce new designs and techniques through production-cum-training centres and supply of better equipments, and marketing cooperative to help rehabilitate them economically at their present place of habitation. Revival of lost tribal crafts could be done through the cooperation of All-India Handicrafts Board. Walnut wood work by Gaddies could be considered an instance of possible opportunities.

Development of Tribal Areas

12.39 Sometimes, the idea of making these areas self-sufficient in food is thought of. While in the short-term programme, increased production of food may be desirable, in the long-run, specialization in fields where natural advantage is largest is recommended. The economy of these areas should be integrated with that of the lower regions. Opening up of two dry fruit research stations, one at Pangi and the other at Chini, and setting up of a crop research station and one or two multipurpose seed farms in Kinnaur are desirable steps. More of suitable land should be cultivated with vegetable seed crops, cash crops and medicinal herbs. In fact, it would be desirable to have a multipurpose project for horticulture and collection of medicinal herbs. A phased programme of bringing 10,000 to 15,000 acres under fruit trees by the end of the Fourth Plan in Chini, Pangi and Bharmour is suggested.

12.40 Extension of irrigation facilities is one of Himachal's immediate problems. In most tribal areas the lack of irrigation is the common complaint. Although irrigation possibilities are limited, crude dams could be constructed by assembling boulders and pumping sets could be installed on an experimental basis. Greater attention is being given to irrigation schemes at present and uptil now 16 new *kulhis* have been constructed at Chini, Pangi and Bharmour areas; 26 old ones have been repaired in Kinnaur district. Another line of urgent development would be research and propagation of quick-maturing varieties of foodgrains and other crops. In order to meet this need two crop research stations, one in Chini and another in Pangi, may be provided during the Third Plan.

Problems of Tribes

12.41 The problems of tribes can be summarized thus: (*a*) lack of means of communication, (*b*) deficit agricultural economy and actual shortage of food, (*c*) inferior breed of livestock and larger number than what the land can support, (*d*) out-moded and wasteful methods of production, inadequate marketing facilities and (*e*) backward social life and habits. It is encouraging to note that most of these schemes are being taken up.

12.42 Added to the inhospitable physical features of the tribal areas and the lack of resources, the social life of these people is partly responsible for their poverty. Social habits like drinking and polyandry among Kinners and migratory habits among Gaddies and Gujjars have affected their very way of life. A queer sense of dignity attaches to certain jobs. Among many tribal people road-construction work is unbecoming. Where there is the system, ploughing is done only by the scheduled castes. Similarly, certain jobs like spinning are exclusively reserved for women. Most of these would require a motivational approach through education and training programmes. The latter will follow, after the permanent settlement of the nomadic tribes, which is at present being carried on in the Territory.

12.43 It will be seen that the key to a solution of the social problems lies in a sympathetic and psychological approach. As for the economic problems however, they fall under two categories — the short-term and long-term. For the enduring development of these areas first and foremost their isolation must be ended. These areas should be provided with dependable means of communication and opened up to the mainstream of the country's economic life.

12.44 The key to successful tribal welfare is good administration. So far, progress has suffered for want of adequate number of trained personnel. The need for an intensive approach in Community Development is nowhere greater than in tribal areas. At present not only is the number of blocks sanctioned for Scheduled Tribe areas of Himachal Pradesh small, but also the development effort is true to the pattern and is not oriented to the peculiar needs of the area. In those places mobility is so difficult and the problems are so special that the usual population criterion for blocks should give way to a realistic test, namely, work-feasibility by the development staff. On this basis Chini and Pangi should each get a minimum of two multipurpose blocks. Also, the block budget for Kinnaur area needs to be revised to suit local conditions, and one more block should be provided for this district. Again, both Pangi and Chini blocks should get one horticulture officer each and Bharmour deserves one more livestock officer with specialized training in sheep-rearing.

12.45 An appraisal of the First and Second Plans shows that whatever little had been done, had emphasized the need of education and other social services. A shift in emphasis to the economic aspect and developmental possibilities of the tribal areas is a necessity. The outlay on the uplift of the tribals will have to be increased and may be around Rs. 100 lakhs in 1961–66 and Rs. 200 lakhs in 1966–71. But an intensive socio-economic survey of the tribals with particular emphasis on the developmental possibilities is essential.

Chapter 13

Pattern of Development

13.1 A region's pattern of growth depends on its resources potential, the base from which development is accelerated and the quantum of economic and social overheads available. Himachal Pradesh is poorly placed in all these respects.

13.2 The resources endowments of the Territory, as now known, are not rich. Salt and slate are the only mineral occurrences with some economic significance. Much of the area remains to be geologically explored. The future mineral potential remains unknown.

13.3 The economic base for development is rather constricted. The aggregate income of this Union Territory in 1955–56, was Rs. 20 crores; and the per capita income Rs. 175, which was much lower than the all-India average of Rs. 261. Of the aggregate net output, agriculture and other primary activities contribute 70 per cent, industry 11 per cent and tertiary sector 19 per cent. Agriculture is still primitive and has to carry the burden of sustaining 93 per cent of the population with a livelihood. Industry, predominantly confined to the cottage and small sector, is technologically backward.

13.4 The infra-structure essential for growth is also poorly developed. Key services such as transport and communications are pitifully inadequate. The deficiency is all the more conspicuous, considering the isolated situation of the Territory and the hilly nature of its terrain. Nor are social overheads such as education and public health better developed. About seven per cent of the inhabitants are tribal, untouched as yet by the winds of modern economic change. Isolation of a very large mountainous area, not easily accessible to transport, acts as a formidable obstacle to rapid progress.

13.5 However, the situation in Himachal has its silver lining. The State has a large forest potential. The forests cover more than a third of the geographical area of the State, and produce a variety of products of which timber, firewood and resin are important.

13.6 Secondly, horticultural potentialities offer substantial compensation for deficient agriculture. Fruit crops like apples are very high value yielding, surpassing any that food crops can fetch.

13.7 Thirdly, the Territory has neighbours who are comparatively better endowed in resources and growth potential, and whose resources, in some way, stand in complementary relation to that of Himachal Pradesh. Thus, Punjab and U.P. produce enough foodgrains, so that Himachal need not have to pursue the difficult goal of self-sufficiency. Similarly, the immediate hydro-potential of Himachal Pradesh is being exploited by Punjab. This relieves Himachal of the trouble of generating its own power. It can easily share in the distribution. All these are great advantages, for a small Territory in its early stages of growth, more so when it lacks adequate capital resources for development.

13.8 Fourthly, another factor in favour of the Territory is its slow rate of population growth. The decennial growth during the past 50 years has been, with the exception of 1931–41, of the order of about five per cent. Since 1951, however, it has averaged the all-India rate of 2·1 per cent.

13.9 Lastly, Himachal Territory is strategically important to India. This introduces certain extra-economic considerations in the determination of the size and pattern of planned outlay. Already the Central assistance to the Territory far exceeds the State's own revenue resources. It was five times as much during the Second Plan. This favourable treatment is bound to continue in the future Plans.

13.10 It is in this background that the guidelines for economic development of the Territory should be sketched. The conventional approach that underlines the pattern of growth of any region is that it should not lag behind others in the overall rate of growth. This, however, cannot apply to Himachal Pradesh with its very meagre resources endowments, and a poor initial growth base. The State may not be able to achieve any growth acceleration before 1976 and all that can be done for the next ten or fifteen years is to work towards achieving it. It is a strenuous task.

13.11 The second objective is to augment the financial resources of the State so as to progressively reduce its dependence on the Centre for assistance. The Territory now relies on the Centre for its investment outlay and a large part of its annual revenue expenditure. Sooner or later, Himachal should improve its financial position through increases in output and savings.

13.12 With these objectives in view, the Council has recommended an outlay of Rs. 38·8 crores in the Third Plan and Rs. 51·1 crores in the Fourth Plan as compared to Rs. 14·7 crores in the Second Plan. The pattern of investment has a bias towards augmenting transport and social services which together absorb about 49 per cent of the total investment during the Third Plan and 47 per cent during the Fourth Plan period, with a view to strengthening the infra-structure; an attempt at a shift from agriculture to horticulture through a change in the cropping pattern in favour of horticultural and cash crops; to improve the forest resources through better extraction techniques, mechanized logging and conversion practices; to strengthen the agricultural base through extensive soil conservation measures, enlargement of irrigation facilities and better cultivation practices; to upgrade the livestock through better feeding and breeding; to strengthen the social overheads by enlarging medical and health facilities, increasing the outlay on backward classes for improving their well-being; and finally to build up cooperatives, panchayats and community development services as instruments of growth.

13.13 As has been indicated, no ambitious programme of establishing large-scale industries can be launched for the next ten years. Reorganization of the cottage and small industries by provision of better credit and marketing facilities and improved technology is the main line of development indicated. There is no need for any marked investment in power generation either. The neighbouring State, Punjab, can provide ample power.

13.14 The quantum of outlay suggested for Himachal Pradesh is proportionately larger in 1961–71 as compared to the outlay during the Second Plan period (Table 43). This proportion is also very high as compared to other States for which development programmes are suggested by the Council. This is because of the existing backwardness of the economy, the low base it has to work from, and the peculiar problems confronting it of which topography is a decisive factor.

13.15 For the next decade and perhaps for a longer time to come, agriculture will remain the mainstay of the people. An investment of Rs. 3.9 crores during the Third and Rs. 5.6 crores during the Fourth Plan periods is envisaged as compared to Rs. 1·63 crores during the Second Plan period. Though the quantum of investment seems to be small, its effect on agricultural production is expected to be very high. This is because the investment is to be directed towards

soil conservation, improved seeds and fertilizers. Of all the problems faced by the Himachal agriculture, that of soil erosion is the most acute. Immediate steps should be undertaken for planting fringe forests along the river beds and the Gobindsagar catchment area. The scope for extending irrigation facilities is limited; but utilization of ground water resources, especially through tube wells in Sirmur, Mandi and Bilaspur districts has possibilities. The suggested shift in the cropping pattern towards horticulture and cash crops will help radically transform Himachal economy. An acre under apples yields an output valued at Rs. 5,000 (gross) whereas an acre under wheat yields only about Rs. 150. Better transport, marketing and cold-storage facilities should, no doubt, be provided for a wider adoption of cash crops. The possibilities of extending the area under crops such as ginger and seed potatoes should be explored. Among others, sugarcane, chillies, vegetables and medical herbs have possibilities of extension in acreage.

13.16 Livestock development should take the twin forms, feeding and breeding. The cattle in Himachal is poor in number and quality. Yet, in 1955–56, the contribution of livestock to the State income was 22 per cent of the total, second only to that of agriculture. The outlay envisaged in this sector during 1961–71 is therefore about 10 times that during the Second Plan. This is because, the outlay base during 1956–61 was rather narrow. Wool in Himachal Pradesh fetches poor return due partly to poor marketing and partly to lack of processing facilities. The cooperatives seem to be the proper agencies for improving these.

13.17 A bigger outlay is proposed for forest development as well—Rs. 8 crores during 1961–71 as against Rs. 55 lakhs during 1956–61. An adequate afforestation programme not only increases the forest potential, but will play an important role in strengthening the Territory's agricultural base. It will be an important soil conservation measure. An intensive land use survey should be undertaken forthwith to facilitate detailed plans for development and utilization. The Council is of the opinion that there is need to organize a development group to study, develop and implement extraction techniques, mechanized logging and improved conversion practices.

13.18 Regarding industrial development, the broad pattern should be to develop local industries to meet the local demand. The total outlay proposed during the next decade is Rs. 13 crores as against Rs. 4·8 crores during 1956–61. Though the Council has recommended a few engineering industries and a soda ash plant for the Territory, the scope for large scale development is rather limited in the decade to come. It is in the sphere of cottage and small scale industries that development can be looked for, and adequate outlays are suggested towards this. Handicrafts have good chances for export, provided the quality and design are improved. There is need for a survey of the industrial potential based on further knowledge of mineral and other resources. The establishment of industrial cooperatives will act as incentive to establishing new industries.

13.19 Power, though an important factor in economic development, takes up comparatively little investment—Rs. 7 crores during 1961–71. This is because, power is available in plenty in the neighbouring States and the Territory will do well to purchase power than attempt at its own generation. The investment will consist mainly in construction of transmission lines. In isolated interior areas, generation of power through midget hydel sets may be necessary.

13.20 Transport and communications are of major importance in this Territory and top priority is given for the extension and improvement of roads. In this, the Council recommends a phased programme—an accent on the improvement aspect in the Third Plan and both extension and improvement in the Fourth. Immediately, the need to improve the existing roads appears

even more urgent than extension of roads in a difficult terrain. The road transport needs streamlining in matters, administrative and financial. The programme of development recommended, involves an investment of Rs. 17·5 crores during 1961–71 as compared to Rs. 4·6 crores during the Second Plan period.

13.21 For an isolated territory with a large tribal element in the population, overheads act as a powerful lever to economic growth. The human base for development needs strengthening through educational and public health measures. The outlay envisaged for the decade 1961–71 in this sector is Rs. 23 crores, compared to Rs. 5 crores during 1956–61.

13.22 The instruments of growth—the cooperatives, panchayats, community development blocks and the administrative machinery also need large outlays. These can transform in due course a stagnant primitive economy into a growing one.

13.23 The establishment of a network of panchayats and service cooperatives in rural areas and the opening up of the purchase-cum-sales posts have a key role to play in the creation and mobilization of the economic surplus. The organization of these institutions on a sound footing is an arduous process calling for patience, tact and an informal approach on the part of the Administration.

13.24 The pattern of development that emerges thus on the basis of a detailed techno-economic analysis of the Himachal Pradesh economy seeks to carry further forward many of the developmental programmes already undertaken in the First and Second Plans. On the resources side, forest development receives a new emphasis, and horticulture and change in crop pattern on the agricultural side. Among the economic overheads, Transport, both in improvement and extension, claims the largest attention. Provision of adequate social overheads and forging of the instruments of growth will strengthen the human resources base. Industry has to content itself with such development as is possible in the cottage and small scale sphere and cannot look forward to any "big push" strategy for a decade to come.

13.25 Even with this pattern of growth and this size of outlay proposed, it is not possible to achieve any phenomenal growth, not even the average for the country as a whole. The Territory may still lag behind the average growth rate for all-India. It is estimated that during the Third Plan the growth rate would be 4 per cent per annum and during the Fourth Plan, 5 per cent per annum. In other words the economy may still be in a somewhat stagnant state at the end of a decade with little internal momentum for any take-off. A major share of the outlay in the meantime would be going to the strengthening of the economic and social overheads and the forging of the instruments of growth. This is a long drawn out process in the conditions obtaining in the Territory. By 1976, however, the basic infra-structure will have been adequately built up; and then may start the growth phase when the Territory may try and lift itself by its own bootstraps. But to reach that point, concerted efforts and big outlays are necessary even now. The need for large Central assistance will remain until then.

Chapter 14

Summary of Conclusions and Recommendations

1. The Setting

1. Out of an area of 11,524 square miles in Himachal Pradesh, a little more than a third is at an altitude of 10,000 feet and above. This minimizes the total area available for economic utilization. The rugged character of the terrain aggravates the situation. These factors also multiply the economic and communications problems.

2. The five soil zones into which the Territory divides itself offer scope for growing a variety of vegetables, fruits and crops. Important among these are seed potatoes, ginger, apples, wheat and maize. However, from the point of view of optimum land use, horticulture and vegetable seeds should receive greater attention.

3. While the Territory is not rich in minerals, it has ample forest resources. The technique of extraction and utilization of timber of various kinds offers much scope for improvement and modernization.

4. In spite of commendable efforts during the last decade, industries are relatively undeveloped. The general poverty of the people and the consequent lack of finance coupled with the difficult problems of transport present great obstacles. Cottage industries, however, have occupied an important place in the economy of the Territory. The scope for future industrialization lies mainly in the forest-based industries which can open up new avenues of employment to the rapidly growing population.

5. In any programme of development of a backward area like Himachal Pradesh, the instruments of growth such as education, health and transport should occupy a high place in the order of priorities.

2. Agriculture

6. There is not much scope for extending the area under cultivation. Therefore, for increasing the agricultural production stress should be laid on increasing the productivity of land through intensive and better methods of cultivation.

7. Soil erosion is a great menace in the Territory. The efforts at mitigating its effects should be intensified.

8. Grazing should be prohibited in the catchment areas and on slopes which are highly exposed to soil erosion.

9. In every Community Development Block there should be at least two seed multiplication farms which may also serve as demonstration farms. In addition there should also be two seed stores.

10. Efforts should be made to cover the entire maize acreage with hybrid variety.

11. Local manurial resources should be fully exploited and these may be supplemented with 10,000 tons of chemical fertilizers annually. The present programme of conducting manurial

and agronomic trials on the cultivator's fields in addition to experimental farms should be extended and made a permanent feature.

12. In the context of the silting of river beds and Gobindsagar, two steps should be taken, viz., (*i*) planting of river fringe forests, (*ii*) adopting the shelter wood compartment system of natural re-generation and large scale afforestation.

13. There is scope for utilization of ground water in the plain areas of Mandi, Sirmur and Bilaspur districts.

14. A shift in the cropping pattern from food crops to cash crops, including horticulture, is necessary, as the terrain, climatic factors and soil conditions are best suited for such crops.

15. Steps should be taken to improve the marketing of cash crops through cooperatives and by regulating trade practices.

16. A research-cum-testing centre should be started in Himachal Pradesh to evolve and improve implements for agriculture, best suited to the Territory.

17. Available agricultural statistics are inadequate and frequently inaccurate. Regular sample surveys should be organized to secure more reliable estimates of area and production.

Horticulture

18. The scope for horticultural development in Himachal Pradesh is immense. Attention should be paid to large scale development of horticultural crops especially the orchards. Adequate transport facilities, availability of good seeds and planting material are necessary for success in this direction.

19. The programme for potato cultivation should aim at higher yields through intensive farming rather than extension of area, and no temporary gains should stand in the way of the efficient use of land.

20. The programmes, such as the provision of cold storage and grading facilities at places of collection and marketing, and the formation of fruit and potato growers' cooperatives should be implemented.

21. A model factory for canning and processing fruits should be set up, preferably in Mahasu district.

3. Animal Husbandry

22. The quality of the cattle is poor. There is also not much scope for reducing the number without having adverse effects upon the whole economy.

23. As cattle are important to the economy, top priority should be given to the question of cattle feed by growing more fodder crops and developing pastures wherever possible. The existing pastures can be made more productive by reseeding the pastures and by avoiding mixed grazing and over-grazing.

24. The long-range solution of the fodder problem lies in reducing the number of animals but their productivity would have to be improved.

25. To start with there should be at least one veterinary hospital for every 10,000 heads of cattle and the number should be doubled by 1976. In the absence of permanent veterinary dispensaries, mobile dispensaries should be introduced wherever possible.

26. The quality of sheep and goats is not of a high order. Facilities should be provided to improve the quality by setting up at least one sheep-breeding farm in each district immediately and the number should be increased to 3 or 4 in each district by the end of the Third Plan.

27. Wool in Himachal Pradesh fetches a low price, partly due to bad marketing and partly due to lack of processing and grading facilities. These deficiencies should be looked into by standardizing, grading, demonstrating economic methods of processing and expanding the cottage industry. One cooperative processing and production society should be started in each district and in the more important woollen regions, and an additional one may be started later.

28. Purchase posts for wool should be set up immediately either by the cooperatives or by the Government in Chamba district to facilitate the marketing of wool.

29. Poultry has great possibilities of development. The progress made is, however, slow due to lack of technical personnel. In view of the relatively small investment in poultry farms and large returns from them, the developmental programme should be intensified by attaching a small demonstration farm to every veterinary dispensary in addition to the starting of independent poultry farms and adequate training should be imparted.

30. Five poultry farms, one in each district, should be started during the Third Plan.

4. Fisheries

31. Development of fisheries during 1961–71 will have to be in two different directions: (i) the culture of game fish, and (ii) the expansion of food fish.

32. Hatcheries at Mandi and Mahasu should be enlarged. A new small hatchery at Sangla should be established.

33. The main direction of development is in Gobindsagar. This fisheries project should be taken up at Himachal-Punjab inter-State level.

34. The success of the developmental schemes requires strengthening of the Administration.

5. Forests

35. An intensive forest land use survey should be taken up to facilitate detailed plans of land allocation according to rational uses and to indicate the phasing of the uses.

36. A network of forest roads with an easy gradient and about eight feet in width should be built to facilitate the operation of fully mechanized equipment for the extraction of timber from the forests.

37. If the present mismanagement persists the Administration may consider the question of acquiring the private forests.

38. Attempts may be made to prevent illicit cutting. The pre-war concessional sale rates should be enhanced to prevent wasteful cutting. The panchayats need to be educated about the benefits of forest conservation.

39. Coordinated regeneration-cum-exploitation programmes should be formulated for reconditioning mountainous regions and river valleys.

40. In view of the importance of soil conservation measures both to agriculture and forestry in the Territory, a separate soil conservation department should be set up.

41. The grazing policy should be clearly defined and should be rigorously implemented.

42. The pace of regeneration of forests should be accelerated and to achieve this objective, both artificial and natural methods should be simultaneously adopted.

43. The annual output should not exceed the annual increment and inferior growth should be replaced by commercially valuable species.

44. Departmental forest utilization, now limited, should be gradually extended to other areas and the necessary personnel should be made available.

45. For rational utilization of forests, the wood which can be used for structural purposes, should not be used as fuel. Cast iron and concrete prestressed sleepers should replace wooden ones; moreover, wood should also be used as chemical raw material. New types of firewood producing trees should be grown.

46. It is desirable to organize a development group to study, develop and implement extraction techniques, mechanized logging and improved conversion practices.

6. Minerals

47. Not much is known about the quality and quantity of the many reported mineral occurrences. However, as the occurrences are in favourable geologic formations, the mineralized zones could be substantial.

48. Exploration should be taken up in the Third Plan to assess the quality and reserves of the mineral occurrences particularly with reference to (*a*) clays for pottery (glazed, rod and china clay goods) in Mahasu, Mandi and Sirmur, (*b*) salt for the chemical industry in Jogindernagar, (*c*) barytes for the paint industry in Sirmur and (*d*) copper and lead occurrences in Mahasu and Sirmur districts.

49. Gypsum and limestone are other minerals with economic possibilities, particularly for a cement factory. However, at present, a cement unit is not economic due primarily to the absence of rail facilities.

50. Among the known exploited deposits, slate is plentiful but its quality is poor and utilization is limited to roofing slates in the local hilly areas. While improvements in quarrying and mine transport would reduce the cost, the quality of the slate could not be changed. Extensions of the market area will be dependent on a reduction in mine costs.

51. Rock salt is currently being served in Mandi district and could be used after purification, both for domestic use and as a raw material for the chemical industry. Market expansion is dependent on reductions in the production costs through improved techniques and, diversification of uses.

52. The major bottleneck for utilizing many of the potential mineral resources is inadequate road and rail facilities. Hence immediate attention should be given to extend and improve transportation in these areas.

7. Power

53. The present demand for electricity is very small both in proportion to the size of the Territory as well as its population. This is largely due to the lack of development in communication, of townships and of industries processing local resources.

54. Basic studies in hydrology and forests of Himachal Pradesh followed by opening up through road communications to places rich in potential resources are essential for the development of industry and power.

55. Over the next decade investment in the power sector should be confined mostly to building up of transmission and distribution facilities to regions within economic reach with a view to connect with the Nangal-Uhl system and at the same time small hydel or diesel stations may be set up in isolated localities.

56. Himachal Pradesh contains many sites where hydro-electric power could be generated economically. The results of hydrological studies suggested above (para 54) will indicate possible sites and quantities of power that can be generated and the benefits that can accrue.

8. Transport

57. The rural set up of Himachal Pradesh being one of dispersed villages in the hilly terrain, it will not be feasible to connect every village with even a bridle path. A cluster of villages with a focal point such as the Community Development Centre may become the objective of motorable roads.

58. The immediate concern should be making the fair weather roads usable throughout the year, proper maintenance of the roads that have fallen into disrepair and provision of bridges and culverts to improve the efficiency of the transport system.

59. In the Third Plan period, the primary roads may be raised to higher specifications and the other roads in the interior may be brought up to minimum standard and during the Fourth Plan period the latter should be improved.

60. As road needs and the rate of economic growth are neither regionally nor quantitatively static, periodic traffic surveys should be instituted.

Road Transport

61. Owing to the hilly terrain, the expenditure on the purchase, operation and maintenance of vehicles is particularly heavy as compared with the conditions in the plains. More vehicles are needed to perform a given service. As the number of vehicles required to service all parts of the Territory cannot be provided all at once, the proper phasing of the regional extensions of the services acquires a special importance.

62. The key position of transport in economic development emphasizes the importance of sound financial administration of the rationalized transport system, and the desirability of giving back to the public the surpluses or profits earned in the form of either improved service or cheaper fares and freight rates.

63. In order to cope with the demand for technical personnel, an automobile training school should be attached to the Central Workshop at Taradevi.

64. In order to reach broad gauge railheads, the vehicles belonging to Himachal Pradesh have to pass through the Punjab. Free movement in the Himachal-Punjab-Uttar Pradesh region unhampered by strict reciprocity conditions is desirable.

9. Tourism

65. A detailed survey of the potential tourist centres in the light of accessibility, facilities, seasons and scope for development should be made.

66. As the Territory has great potentiality for tourist traffic, it is essential to have organized publicity about the tourist spots and the facilities available there.

67. The existing centres should be improved by the provision of better roads and transport, tourist homes and diversified attractions.

68. Emphasis should be placed on attracting the middle income group tourists.

10. MARKETING

69. In view of the fact that a considerable part of the economy is non-monetized, special attention should be given to the organization of marketing.

70. Two major collection and distribution centres in each district should be established during the Third Plan period.

71. Cooperative marketing societies, at least two in each district, should be started. Out of these two, one should specialize in marketing fruits and perishables and the other in less perishable products.

72. Three regulation markets, one each in Mandi, Mahasu and Sirmur districts should be set up during the Third Plan.

73. The major collection and distribution centres should be provided with warehouses.

74. The weights and measures should be standardized.

11. INDUSTRY

75. In the light of the resources as currently known, the scope for resource-based large and medium industries is limited and the conditions of the area are such that emphasis should be more on small and cottage units.

76. The broad base of the policy should be to develop local industries to meet local demand and to set up those with a comparative cost advantage to supply the outside market.

77. To widen the market for handicrafts, steps should be taken to improve quality and design.

78. Improved equipment, assured supply of raw material and greater emphasis on production-cum-training centres and common facility centres are necessary.

79. A design centre should be set up for the present in Mandi and later at one or two other places.

80. Surveys of industrial potential based on further knowledge of mineral and other resources should be undertaken periodically.

81. A proper organization for industrial statistics should be immediately established in the Industries Department.

82. Trading centres in woollen weaving and leather goods should be set up in Mahasu and Chamba.

83. A beginning must be made in starting and extending industrial cooperatives in the Third Plan. The Administration should take the lead in establishing and running these institutions. The services of cooperatives should be utilized in the replacement of crude and primitive tools.

84. As sericulture is ideally suited for Himachal Pradesh, nurseries and farms should be encouraged.

The possibilities referred to above in large and medium units in the chemical, metallurgical, forest-based and agro-based industries are indicated below:

Large and Medium Units—Possibilities

85. *Soda Ash Plant.* A soda ash plant with a capacity of 6,000 tons at Jogindernagar.

86. *Cement Plant.* With a capacity of 231,000 tons per year may be set up some time in the future.

87. *Pig Iron Plant.* A pig iron plant with a capacity of 30,000 tons in the Third Plan period at Jogindernagar.

88. Rolled sections, bars, rods and sheets plant. One re-rolling plant at Jogindernagar.

89. *Iron Castings.* Malleable and special alloy iron castings—one unit of 5,000 tons capacity at Jogindernagar.

90. The Nahan foundry may be expanded in the Third Plan period. A nearer railhead, 11 miles away at Rajban, may be constructed to reduce cost.

91. *Electrical measuring instruments plant.* One unit in the Third Plan.

92. *Fruit preservation medium size plant.* One in Mahasu and one in Chamba. Investigations are required before finalizing the location.

Small Scale Sector—Possibilities

93. *Lime Burning Plant.* A lime burning plant with a capacity of 1,000 tons may be set up at Sataun.

94. *Khandasari Sugar.* In the Third Plan period adequate financial and technical aid may be given to enable the recovery of a larger percentage of sugar.

95. *Ayurvedic Drugs.* Production of ayurvedic drugs can be expanded if new machinery is introduced and marketing is organized.

96. *Sheet Metal Units.* Five sheet-metal units, one in each district may be set up during the Third Plan.

97. *Castings.* A ferrous foundry in Bilaspur and one in Mandi, after the establishment of the machining unit towards the end of the Third Plan. Five non-ferrous foundries, one in each district town, in Mandi and Chamba in the first two years of the Plan and in the other districts by the close of the Third Plan period.

98. *Fruit Packing Boxes.* The two box making factories, one in the Third Plan and the other in the Fourth Plan, using improved techniques each with a capacity of 25,000 to 30,000, one in Mahasu and the other in Chamba.

99. A wood turnery goods plant.

100. Tooth picks and ice cream spoons industry.

101. Furniture making.

102. *Maintenance and Repair Shops.* Five units, one in each district, could be established in the Third Plan with an outlay of Rs. 50,000 each.

103. *Tyre Retreading.* One tyre retreading plant immediately in Mandi and two others towards the end of the Third Plan in Solan, Bilaspur and Nahan.

12. Human Resources

A. Manpower

104. Underemployment is acute. It is difficult to estimate precisely the magnitude of the problem as lower labour mobility is explained by the dispersed and inaccessible nature of the villages. It is also due to the seasonal character of the working period as large areas get snow-bound and movement becomes difficult. The potential labour force in 1961 and 1971 may be estimated to be of the order of 710,000 and 770,000 respectively. A specific survey of unemployment and underemployment is recommended.

105. The bulk of future employment would have to be in the secondary and tertiary occupations and these sectors should be expanded and local manpower trained to meet the requirements.

106. As the economy of Himachal Pradesh cannot absorb all the labour force, the current migration of unskilled labour into the neighbouring States will have to continue and facilities should be provided to make the flow easier.[1]

B. Tribal Problems

107. The tribal population forms an important part of the Territory.

108. The main problems of the tribal areas are lack of irrigation facilities and inadequate transport.

109. A detailed survey of the needs and development possibilities of the backward areas should be taken in hand.

110. As the all-India pattern and programme of the Community Development Blocks are found unsuitable to the peculiar problems of tribal areas, a suitable modified type should be evolved.

111. Apart from more imports of food, local ground irrigation should be developed by setting up, on an experimental basis, pumping sets and dams in the traditional style.

112. A phased programme of bringing 10,000 to 15,000 acres under fruit trees by 1971, in Chini, Pangi and Bharmour is urged.

113. Two crop research stations, one at Pangi and the other at Chini, require to be established in the Third Plan period.

114. For developing the tribal areas, adequate and specially trained personnel should be built up.

115. Tribal handicraft should be rehabilitated through opening up of production-cum-training centres, extending cooperatives and setting up collection posts in the Community Development Blocks.

13. The Pattern of Development

116. While the development of Himachal Pradesh, like that of any other State, should be balanced, the Territory's economy should initially have an agro-transport orientation.

[1] Some of the undermentioned recommendations have been detailed in the respective chapters but they are stressed here because of their special importance in the tribal areas.

117. In view of the inadequacy of education, health and skill and the isolation of the very large mountainous areas, development in Himachal Pradesh in the next decade cannot be rapid. And, therefore, investments in the Third Plan will have to be mainly on building up the base such as transport, power, education, health and skill.

118. With the development of cooperatives, it should be possible in due course to establish panchayats, which would become instruments of further development.

119. The total outlay in the next decade will have to be Rs. 8,535 lakhs, Rs. 3,380 lakhs in the Third Plan period and Rs. 5,155 lakhs in the Fourth, as compared with Rs. 1,473 lakhs in the Second Plan (Table 43).

120. The share of agriculture and irrigation will be Rs. 150 lakhs and Rs. 210 lakhs in the Third and Fourth Plan periods respectively, and of forests Rs. 300 lakhs and Rs. 400 lakhs in the two Plans. Transport would account for Rs. 1,750 lakhs in the next decade, of which Rs. 750 lakhs would be in the Third Plan.

121. The largest outlay should be on education, health, cooperation and other instruments of growth. The amount in the Second, Third and Fourth Plan periods on this head are to be Rs. 477 lakhs, Rs. 900 lakhs and Rs. 1,410 lakhs respectively.

122. The long-term objective of Himachal Pradesh economy should be to attain self-sustaining growth and its dependence on the Union for resources should decline. Further, the growth of the economy should not lag behind other parts of India.

Tables

TABLE 1

LAND UTILIZATION
(1951-52 to 1957-58)

(In thousand acres)

Particulars	1951–52	1952–53	1953–54	1954–55	1955–56	1956–57	1957–58
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Total geographical area by professional survey	6,977·50	6,977·50	6,977·50	6,979·15	6,979·15	6,990·08	6,990·08
2. Total geographical area by village papers	2,301·33	2,303·07	2,302·56	2,312·65	2,304·65	2,304·60	2,970·77
3. Forests	404·45	403·21	399·75	399·60	400·54	522·01	1,209·55
4. Barren and uncultivable land	95·46	58·33	97·50	69·39	71·48	78·23	77·04
5. Land put to non-agricultural use	97·51	128·97	62·56	87·87	87·29	101·31	116·82
TOTAL[a]	192·97	187·30	160·06	157·26	158·77	179·54	193·86
6. Cultivable waste	95·80	91·49	89·84	90·79	99·37	108·04	116·06
7. Permanent pastures and other grazing lands	821·22	835·22	865·50	857·90	860·35	1,372·10	1,581·58
8. Land under miscellaneous tree crops and groves not included in net area sown	68·38	64·57	62·77	71·52	61·97	62·75	64·91
TOTAL	985·40	991·28	1,018·11	1,020·21	1,021·69	1,542·89	1,762·55
9. Current fallows	37·62	38·79	39·29	39·63	36·28	38·83	40·03
10. Other fallows	20·08	19·37	18·10	17·39	8·43	9·00	6·98
TOTAL	57·70	58·16	57·39	57·02	44·71	47·83	47·01
11. Net area sown	660·81	663·12	667·26	668·56	678·89	678·50	668·55
12. Total cropped area	1,033·25	988·69	1,019·21	1,040·51	1,047·33	1,046·77	1,067·26
13. Area sown more than once	372·44	325·57	351·95	371·95	368·44	368·27	398·71

[a] Total (4 + 5).

SOURCE: *Quarterly Bulletin of Statistics*, December 1958, Himachal Pradesh.

TABLE 2

DISTRICTWISE LAND UTILIZATION
(1957–58)

(In thousand acres)

District	By professional surveys	By village papers	Forests	Not available for cultivation			Other uncultivated land excluding current fallows				Fallow lands					
				Barren and uncultivable land	Land put to non-agricultural use	Total	Cultivable waste land	Permanent pastures and other grazing land	Land under miscellaneous trees and groves	Total	Current fallows	Other fallows	Total	Net area sown	Total cropped area	Area sown more than once
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Mahasu	3,021·44	867·38	143·70	26·77	26·62	53·39	42·00	308·07	0·29	440·36	10·69	2·90	22·59	207·33	314·25	106·91
Mandi	974·72	479·02	94·81	23·10	14·44	37·54	8·53	138·35	..	146·88	6·09	0·59	6·68	193·11	312·18	119·07
Chamba	2,006·40	1,694·62	809·80	3·15	35·98	39·13	18·43	726·44	0·02	744·89	5·67	1·09	6·76	94·04	141·55	47·52
Sirmur	700·80	555·19	129·68	14·81	14·24	29·05	36·98	191·10	64·60	292·68	4·14	1·11	5·25	98·53	169·50	70·97
Bilaspur	286·72	285·31	31·56	9·21	25·54	37·75	10·12	127·62	..	137·74	4·44	1·29	5·73	75·54	129·78	54·24

SOURCE: *Statistical Outline of Himachal Pradesh*, 1958.

TABLE 3

AREA UNDER PRINCIPAL CROPS
(1951–52 to 1957–58)

(In thousand acres)

Year	Food Crops						Pulses	
	Rice	*Maize*	*Ragi*	*Barley*	*Millets*	*Wheat*	*Gram*	*Other pulses*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1951–52	110·27	280·13	40·52	74·01	62·48	330·94	15·69	55·65
1952–53	111·00	280·88	42·11	69·49	68·02	301·78	4·79	53·17
1953–54	112·49	270·86	42·98	72·53	64·67	324·76	15·03	50·30
1954–55	112·08	277·06	42·93	75·00	64·71	331·42	22·31	56·79
1955–56	111·47	278·45	41·85	79·99	64·81	333·56	18·62	59·11
1956–57	111·13	278·76	39·49	78·06	65·14	339·76	17·02	56·56
1957–58	111·02	285·40	38·32	78·36	61·48	330·47	17·75	52·13

Other Food Crops				Non-Food Crops			Other Non-Food Crops		
Sugarcane	*Chillies*	*Ginger*	*Potatoes*	*Sesamum*	*Rape and Mustard*	*Linseed*	*Cotton*	*Tea* [a]	*Tobacco*
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
3·16	0·86	2·07	20·21	1·52	11·81	1·74	1·27	2·06	1·67
3·34	0·52	2·50	20·30	1·60	8·14	1·87	1·22	2·05	1·21
2·21	0·45	2·51	21·93	1·73	8·14	1·99	1·28	1·83	1·60
2·54	0·53	2·53	21·23	1·70	9·16	1·87	1·17	2·04	1·89
2·95	0·54	2·70	21·30	1·99	7·95	2·14	1·31	2·05	1·93
3·41	0·70	2·85	22·14	1·77	9·34	2·08	1·12	2·03	2·10
3·66	0·67	3·24	27·20	1·67	7·96	2·08	1·04	2·05	2·27

[a] Figures relate to Calendar Year.

SOURCE: *Quarterly Bulletin of Statistics*, December 1958, Himachal Pradesh.

TABLE 4

PRODUCTION OF PRINCIPAL CROPS

(1951-52 to 1957-58)

(In thousand tons)

Crops	1951–52	1952–53	1953–54	1954–55	1955–56	1956–57	1957–58 (Estimates)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FOOD CROPS							
A. Cereals							
1. Rice	27·87	21·75	28·51	27·62	34·00	39·12	43·30
2. Maize	66·21	65·00	64·17	66·36	70·63	73·85	68·16
3. Ragi	8·79	5·94	8·02	8·84	8·58	8·24	8·14
4. Wheat	60·21	37·31	90·67	89·96	78·21	103·47	78·17
5. Barley	17·59	12·24	13·41	14·48	14·75	15·02	15·80
6. Millets	11·71	13·58	10·04	11·81	11·39	11·27	10·76
B. Pulses							
1. Gram	1·44	0·55	2·77	5·23	2·64	2·41	2·41
2. Other pulses	2·78	3·95	4·49	3·42	4·03	5·74	5·41
C. Other Food Crops							
1. Potato	15·49	19·00	26·86	17·39	21·94	21·97	27·04
2. Sugarcane [a]	1·21	1·32	1·47	1·45	1·70	1·91	1·92
3. Ginger	1·22	1·06	0·98	1·00	1·14	0·71	0·48
4. Chillies	0·11	0·12	0·06	0·08	0·07	0·10	0·09
NON-FOOD CROPS							
D. Oil-seeds							
1. Rape and Mustard	0·86	0·65	0·65	0·77	0·72	0·68	0·68
2. Linseed	0·12	0·14	0·15	0·15	0·17	0·17	0·15
3. Sesamum	0·09	0·17	0·14	0·19	0·19	0·15	0·15
E. Other Non-Food Crops							
1. Tea [b]	0·10	0·10	0·10	0·10	0·10	0·10	0·11
2. Tobacco	0·24	0·16	0·24	0·37	0·33	0·33	0·36
3. Cotton [c]	0·51	0·53	0·53	0·31	0·46	0·20	0·35

[a] Figures in terms of 'gur'.

[b] Figures relate to Calendar Years.

[c] Figures in terms of thousand bales of 392 lb. each.

SOURCE: *Quarterly Bulletin of Statistics*, December 1958, Himachal Pradesh.

TABLE 5

DISTRICTWISE CROP INTENSITY
(1958)

Name of the district	*Net Area Sown* (thousand acres)	*Total Cropped Area* (thousand acres)	*Crop Intensity*
1. Mahasu	207·33	314·25	151
2. Mandi	193·11	312·18	161
3. Chamba	94·04	141·55	150
4. Sirmur	98·53	169·50	172
5. Bilaspur	75·54	129·78	171

SOURCE: *Statistical Outline of Himachal Pradesh*, 1958.

TABLE 6

LIST OF FODDER SPECIES

Altitudinal Zone	*Fodder Species*
Siwalik Foot Hills 1,100 feet to 2,000 feet	*Morus alba, Mirus indica, Czewia asiatica, Bauhinia, Variegta, Qugenia Dalbergioides, Albizzia species.*
Siwalik Hill Ranges 2,000 feet to 4,000 feet	*Mirus indica, Czewia oppositifolia, Czewia elastica, Celthis australis, Bauhminia Sp., Ougenia dalbergioides, Teriminalia tomentosa.*
Himalayas 4,000 feet to 6,000 feet	*Czewia oppositifolia, Celthis australis, Mirus serrata, Bauhinia Sp., Quicus incans.*
Himalayas 6,000 feet to 10,000 feet	*Mirus serrata, Celthis australis, Omerous incana, Quercus Lipatata, Pzunus puddum, Pzunus cornuto.*
Alpine Region About 10,000 feet	*Querous scmecarpifolia, Pzunus cornuta.*

TABLE 7

SCHEMEWISE EXPENDITURE ON CONSOLIDATION OF HOLDINGS (1956–61)

A. EXPENDITURE

(In rupees)

Name of Scheme	*Total Plan provision*	*Budget 1956–57*	*Actual expenditure 1956–57*	*Budget 1957–58*	*Actual expenditure 1957–58*	*Budget 1958–59 (Administration)*	*Actual expenditure 1958–59 (Administration)*	*Total actual for three years*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Consolidation of holdings	9·50 lakhs	1,00,000	1,00,624	1,20,600	1,13,276	1,61,500	1,58,888	3,77,788

B. PHYSICAL TARGETS

(In acres)

Name of Scheme	*Physical targets fixed for the Plan period (1956–61)*	*Targets fixed for the year 1956–57*	*Targets achieved during 1956–57*	*Targets for the year 1957–58*	*Targets achieved during 1957–58*	*Targets fixed for the year 1958–59*	*Targets achieved during 1958–59*	*Total for three years*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Consolidation of holdings	1,20,000	24,000	13,266	24,000	17,670	24,000	22,927	53,863

SOURCE: Himachal Pradesh Administration.

TABLE 8

DISTRICTWISE BREAK-UP OF AREA UNDER IMPROVED SEEDS

(1957–58 TO 1959–60)

(In acres)

District	*Wheat*			*Paddy*			*Barley*			*Gram*			*Total*		
	1957–58	*1958–59*	*1959–60*	*1957–58*	*1958–59*	*1959–60*	*1957–58*	*1958–59*	*1959–60*	*1957–58*	*1958–59*	*1959–60*	*1957–58*	*1958–59*	*1959–60*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Sirmur	1,207	3,017	7,545	1,889	11,338	13,720	262	1,048	4,188	368	1,472	4,312	3,726	16,875	29,765
Mandi	2,166	5,416	12,530	8,373	50,238	60,780	450	1,800	7,800	97	388	1,132	11,086	57,842	82,242
Bilaspur	8,733	2,183	5,455	1,552	8,304	11,250	14	56	224	569	2,676	7,836	10,968	13,219	24,765
Chamba	7,866	1,965	4,912	1,166	6,996	8,464	443	1,772	7,088	..	..	..	9,475	10,733	20,464
Mahasu	1,848	4,621	11,554	2,860	17,164	17,164	1,071	4,284	17,186	146	584	1,718	5,925	26,653	51,176
TOTAL	21,820	17,202	41,996	15,840	94,040	111,378	2,240	8,960	36,486	1,180	5,120	14,998	41,180	1,25,322	2,08,412

SOURCE: Department of Agriculture, Himachal Pradesh.

TABLE 9

DISTRICTWISE AREA AND PRODUCTION OF POTATOES

(1950–51 TO 1956–57)

Year	*Chamba*		*Mahasu*		*Mandi*		*Sirmur*		*Bilaspur*	
	Area (acres)	*Production* (tons)	*Area* (acres)	*Production* (tons)	*Area* (acres)	*Production* (tons)	*Area* (acres)	*Production* (tons)	*Area* (acres)	*Production* (tons)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1950–51	1,225	1,540	12,162	19,546	2,165	2,850	2,363	3,429	..	..
1951–52	1,236	883	14,279	10,148	2,107	1,504	2,537	2,924	..	..
1952–53	1,051	786	14,083	14,512	2,249	1,605	2,881	2,053	..	..
1953–54	1,951	750	15,024	21,035	2,998	2,992	2,823	2,016	33	71
1954–55	1,161	829	14,871	12,794	2,679	1,913	2,504	1,783	22	70
1955–56	1,138	813	15,178	16,519	2,890	3,096	2,890	3,096	29	40
1956–57	678	622	16,024	17,052	2,198	2,710	3,036	2,710	15	19

SOURCE: Directorate of Land Records, Himachal Pradesh.

TABLE 10

PER ACRE YIELD OF POTATO IN HIMACHAL PRADESH AND OTHER FEW STATES IN INDIA

(Lbs.)

Year	*Himachal Pradesh*	*Bihar*	*Bombay*	*Assam*	*Madras*	*Punjab*	*Uttar Pradesh*	*West Bengal*	*India (average)*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1950–51	3,655	4,763	9,229	4,270	5,102	7,331	6,952	8,887	6,183
1951–52	2,912	4,531	6,289	4,270	5,423	7,653	6,650	9,520	6,117
1952–53	2,240	9,260	10,493	4,781	6,272	11,648	6,382	9,430	6,977
1953–54	2,647	8,590	11,200	5,129	6,540	10,602	6,268	8,917	6,793
1954–55	1,813	5,040	11,200	4,220	6,013	10,304	5,983	7,892	5,910
1955–56	2,347	4,760	9,346	4,352	5,973	11,200	6,309	7,384	5,932
1956–57	2,240	4,571	8,610	2,932	6,525	13,440	5,737	5,885	5,380
1957–58	2,240	4,061	8,688	3,584	6,915	12,634	6,173	7,084	5,653

SOURCE: *Abstract of Agricultural Statistics, India* (1953, 1954, 1957), Ministry of Food and Agriculture.

TABLE 11

AREA UNDER FRUIT PLANTS

(1948 to 1958)

(In acres)

Year	Apple	Apricot			Peach			Plum	Walnut	Citrus	Kainth	Pear	Pome-granate
		Gtd.	Budded	Wild	Budded	Gtd.	Wild						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1948	400	20	..	175	17	..	130	50	175	50	120	30	10
1949	450	25	..	175	30	..	130	80	80	65	120	32	12
1950	575	40	..	170	40	..	110	100	85	85	100	35	15
1951	700	40	..	170	40	..	110	100	85	95	100	15	15
1952 to 1957						Not Available							
1958	4,500	200	..	160	80	..	80	280	150	400	75	100	50

SOURCE: Horticulture Department, Himachal Pradesh.

TABLE 12

CENTRES OF ACTIVITIES AND KINDS OF FRUIT

District	*Centre of Activity*	*Nearness to Road*	*Kinds of Fruits*
Mahasu	Mashobra	On the road	Apple, Cherry, Pear, Peach, Chestnut
	Chini	—do—	Dry fruits, Citrus fruits, Apples etc.
	Khandrala	—do—	Apple and Cherry
	Bahli	—do—	Apple, Cherry, Plum, Apricot
	Suni	—do—	Apple, Citrus fruits
	Annu	—do—	Apple, Cherry
	Bobru	—do—	Apple, Peach, Plum, Apricot
	Kotkhasi	—do—	Apple
	Parala	—do—	Apple, Plum, Apricot, Cherry
	Arki	—do—	Citrus, Apple
Sirmur	Dhaula Kuan	—do—	Citrus fruits
	Rajgarh	—do—	Apple, Pear, Peach, Plum, Apricot, Almond etc.
	Shirumyla	N.A.	Citrus fruits
	Dabria	N.A.	—do—
	Sahnari	N.A.	Apple, Pear, Peach, Plum, Apricot
Mandi	Bhagrotu	N.A.	Citrus fruits, Peach, Plum, Almond
	Jarol	N.A.	Peach, Plum, Mango
	Jhamar	N.A.	Peach, Plum, Apricot, Cherry, Almond, Fig, etc.
	Nagwain	N.A.	Apple, Plum, Apricot, Cherry
	Kilor	Accessible in summer only	Apple, Pear, Peach
	Naila	—do—	—do—
	Bhagot	N.A.	—do—
	Chawari	On the road	—do—
Bilaspur	Kotipura	—do—	Ber
	Kiar Khanesar	N.A.	Citrus fruits, Pear, Peach, Plum, etc.

TABLE 13

AREA OF PASTURE LANDS
(1951–52 TO 1957–58)

(In thousand acres)

Agriculture year	*Geographical area by village papers*	*Permanent pastures and other grazing lands*	*Percentage of area under pasture land*
(1)	(2)	(3)	(4)
1951–52	2,301·33	821·22	35·68
1952–53	2,303·07	835·22	36·27
1953–54	2,302·56	865·50	37·58
1954–55	2,312·65	857·90	37·10
1955–56	2,304·60	860·35	37·33
1956–57	2,970.77	1,372·10	46·19
1957–58	3,881·52	1,581·58	40·75

SOURCE: *Quarterly Bulletin of Statistics*, Himachal Pradesh.

TABLE 14

DISTRICTWISE DISTRIBUTION OF PASTURE LANDS
(1957–58)

(In thousand acres)

District	*Total geographical area by village papers*	*Permanent pastures and grazing lands*	*Percentage of area under pasture lands*
Mahasu	867·38	398·07	45·89
Mandi	479·02	138·35	28·88
Chamba	1,694·62	726·44	42·87
Sirmur	555.19	191·10	34·42
Bilaspur	285·31	127·62	44·73

SOURCE: *Statistical Outline of Himachal Pradesh*, 1958.

TABLE 15

DISTRICTWISE DISTRIBUTION OF LIVESTOCK POPULATION

Category	1951	1956					
	Total	Mahasu	Mandi	Chamba	Sirmur	Bilaspur	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CATTLE							
A. *Males over 3 years*							
1. Breeding	1,571	484	599	225	148	34	1,490
2. Working	1,51,348	1,03,384	1,06,344	64,311	60,629	35,441	3,70,109
3. Others	17,569	2,195	2,965	2,650	1,450	384	9,644
TOTAL	3,70,488	1,06,063	1,09,908	67,186	62,227	35,859	3,81,243
B. *Females over 3 years*							
1. Breeding							
2. In Milk	1,81,917	59,538	44,358	23,716	36,959	4,153	1,68,724
3. Dry and not calved	1,77,732	70,231	74,103	49,911	29,341	7,668	2,31,254
4. Working	54	8	22	6	16	1	53
5. Others	10,345	616	216	233	515	76	1,701
TOTAL	3,70,048	1,30,393	1,18,744	73,866	66,831	11,898	4,01,732
Young stock	3,74,905	1,22,751	1,02,623	69,179	82,369	10,864	3,87,786
TOTAL CATTLE	11,15,441	3,59,207	3,31,275	2,10,231	2,11,427	58,621	11,70,761
BUFFALOES							
A. *Males over 3 years*							
1. Breeding	2,449	626	1,503	323	499	759	3,710
2. Working	602	28	250	424	74	19	795
3. Others	151	20	33	21	26	42	142
TOTAL	3,202	674	1,786	768	599	820	4,647

B. *Females over 3 years*							
1. Breeding							
2. In Milk	54,340	12,558	19,659	8,080	8,960	15,098	64,355
3. Dry and not calved	64,358	10,882	27,654	10,511	8,885	19,531	77,463
4. Others	1,403	89	103	53	372	55	672
5. Working	14	1	12	4	5	..	22
TOTAL	1,20,115	23,530	47,428	18,648	18,222	34,684	1,42,512
Young Stock	51,819	6,960	19,884	7,361	10,839	13,761	58,805
TOTAL BUFFALOES	1,75,136	31,164	69,098	26,777	29,660	49,265	2,05,964
SHEEP							
1. One year and above	4,92,104	1,83,925	1,30,168	1,83,248	40,681	17,831	5,55,953
2. Below one year	1,34,821	49,643	30,327	46,605	10,043	4,605	1,41,323
TOTAL SHEEP	6,26,925	2,33,568	1,60,495	2,29,953	50,724	22,436	6,97,176
GOATS							
1. One year and above	4,52,902	1,43,675	1,59,999	1,16,122	67,314	30,342	5,17,452
2. Below one year	1,18,795	37,335	36,874	31,129	18,585	10,249	1,34,171
TOTAL GOATS	5,71,697	1,81,010	1,96,873	1,47,251	85,899	40,590	6,51,623

SOURCE: *Quarterly Bulletin of Statistics*, Himachal Pradesh, 1958.

TABLE 16

INDEX OF YEARLY CONSUMPTION OF ENERGY BY CLASS OF UTILIZATION

(Base 1951 = 100)

Year	*Domestic or Residential*	*Commercial*	*Industrial*	*Public Lighting*	*Water Works*	*Total*
1948	171	70	77	87	800	133
1949	207	61	63	93	200	150
1950	153	64	82	91	400	122
1951	100	100	100	100	100	100
1952	74	118	99	113	300	90
1953	62	127	99	146	500	89
1954	78	103	289	182	400	120
1955	101	110	299	201	1,000	140
1956	107	131	308	193	100	146
1957–58	124	241	293	162	2,300	176
1958–59	131	345	343	248	2,500	215

SOURCE: Central Water and Power Commission, Simla.

TABLE 17

YEARLY CONSUMPTION OF ENERGY BY CLASS OF UTILIZATION

(In thousand kWh)

Year	*Domestic or Residential*	*Commercial*	*Industrial*	*Public Lighting*	*Water Works*	*Total*
1948	811	107	77	77	16	108
1949	986	92	63	83	4	122
1950	728	98	82	81	8	99
1951	475	152	100	89	2	81
1952	350	180	99	101	6	73
1953	297	194	99	130	10	73
1954	371	156	289	162	8	98
1955	481	167	299	179	20	114
1956	509	200	308	172	2	119
1957–58	580	365	293	144	46	143
1958–59	621	524	343	219	50	175

SOURCE: Central Water and Power Commission, Simla.

TABLE 18

POWER GENERATION—INSTALLED CAPACITY BY USERS

(In kW)

District	*Government*	*Private*	*Industries*	*Railway*	*Military Establishment*	*Total*
Mahasu	208	..	151	..	..	359
Chamba	170	..	..	..	..	170
Sirmur	116	..	10	..	..	126
TOTAL	494	..	161	..	..	655

SOURCE: Central Water and Power Commission, Simla.

TABLE 19

POWER GENERATION—INSTALLED CAPACITY BY PRIME MOVERS

(In kW)

District	*Hydro*	*Steam*	*Oil*	*Total*
Mahasu	50	66	243	359
Chamba	170	..	..	170
Sirmur	..	..	126	126
TOTAL	220	66	369	655

SOURCE: Central Water and Power Commission, Simla.

TABLE 20

POWER GENERATION—YEARLY TREND

(In thousand kWh)

Year	*Source*		*Source*		*Total*
	Diesel	*Per cent*	*Hydro*	*Per cent*	
1948	136	54·8	112	45·2	248
1949	88	30·4	201	69·6	289
1950	136	37·9	223	62·1	359
1951	154	37·9	252	62·1	406
1952	183	40·2	272	59·8	455
1953	181	36·2	317	63·8	498
1954	531	63·1	310	36·9	841
1955	533	62·6	318	37·4	851
1956	561	58·6	396	41·4	957
1957–58	287	35·6	519	64·4	806

SOURCE: Central Water and Power Commission, Simla.

TABLE 21

DISTRICTWISE BREAK-UP OF ROADS
(1955–56)

(In miles)

District	*Primary Roads (24 feet)*	*Secondary Roads (16 feet)*	*Tertiary Roads (9 feet)*	*Quarternary Roads (2–9 feet)*	*Total*
Sirmur	Nil	73	96	93	262
Mahasu	Nil	153	137	141	431
Bilaspur	Nil	69	58·5	119	246·5
Mandi	Nil	74	56	228	358
Chamba	Nil	77	87·5	149	313·5
TOTAL	Nil	446	435	730	1,611

SOURCE: Public Works Department, Himachal Pradesh, Simla.

TABLE 22

DISTRICTWISE BREAK-UP OF ROADS (1958–59)

(In miles)

District	*Primary Roads*	*Secondary Roads*	*Tertiary Roads*	*Quarternary Roads*	*Total*
Sirmur	25	134	154	192	505
Mahasu	78	226	213	268	785
Bilaspur	23	109	95·5	206	433·5
Mandi	25	112	100	326	563
Chamba	28	136	145·5	269	578·5
TOTAL	179	717	708	1,261	2,865

SOURCE: Public Works Department, Himachal Pradesh, Simla.

TABLE 23

DISTRICTWISE CLASSIFICATION OF HIGHWAYS (1955–56)

(In miles)

District	*National Highways*	*State Highways*	*District Roads*	*Total*
Sirmur	..	262	..	262
Mahasu	111	156	164	431
Bilaspur	..	205·5	41	246·5
Mandi	..	288	70	358
Chamba	..	304·5	9	313·5
TOTAL	111	1,216	284	1,611

SOURCE: Public Works Department, Himachal Pradesh, Simla.

TABLE 24

DISTRICTWISE CLASSIFICATION OF HIGHWAYS (1958–59)

(In miles)

District	*National Highways*	*State Highways*	*District Roads*	*Total*
Sirmur	..	505	..	505
Mahasu	230	294	261	785
Bilaspur	..	372·5	61	433·5
Mandi	..	465	98	563
Chamba	..	559·5	19	578·5
TOTAL	230	2,196	439	2,865

SOURCE: Public Works Department, Himachal Pradesh, Simla.

TABLE 25

DISTRICTWISE AND YEARWISE PERCENTAGE OF ROAD[a] MILEAGE (1955–56 TO 1958–59)

District	*1955–56*		*1956–57*		*1957–58*		*1958–59*	
	Road Mileage	*Percentage*	*Road Mileage*	*Percentage*	*Road Mileage*	*Percentage*	*Road Mileage*	*Percentage*
Sirmur	262	16·26	352	16·75	433	17·44	505	17·63
Mahasu	431	26·75	565	26·88	675	27·20	785	27·40
Bilaspur	246·5	15·30	319·5	15·20	374·5	15·09	433·5	15·13
Mandi	358	22·23	443	21·08	499	20·10	563	19·65
Chamba	313·5	19·46	422·5	20·09	500·5	20·17	578·5	20·19
Himachal Pradesh	1,611	100	2,102	100	2,482	100	2,865	100

[a] Includes all types of roads, i.e., Primary, Secondary, Tertiary, and Quarternary except the forest roads.

TABLE 26

DISTRICTWISE AND YEARWISE PERCENTAGE OF MOTORABLE[a] ROADS (1955–56 TO 1958–59)

District	*1955–56*		*1956–57*		*1957–58*		*1958–59*	
	Motorable Roads	*Percentage*	*Motorable Roads*	*Percentage*	*Motorable Roads*	*Percentage*	*Motorable Roads*	*Percentage*
Sirmur	73	16·37	98	16·58	135	17·78	159	17·75
Mahasu	153	34·31	203	34·35	256	34·22	304	33·93
Bilaspur	69	15·47	87	14·72	110	14·71	132	14·73
Mandi	74	16·59	97	16·41	113	15·11	137	15·29
Chamba	77	17·26	106	17·94	136	18·18	164	18·30
Himachal Pradesh	446	100·00	591	100·00	748	100·00	896	100·00

[a] Motorable roads include only Primary and Secondary roads.

TABLE 27

DISTRICTWISE AND YEARWISE MOTORABLE[a] ROAD MILEAGE PER SQUARE MILE (1955–56 TO 1958–59)

District	Area in square miles	1955–56		1956–57		1957–58		1958–59	
		Motorable roads	Motorable road per square mile	Motorable roads	Motorable road per square mile	Motorable roads	Motorable road per square mile	Motorable roads	Motorable road per square mile
Sirmur	1,141	73	0·064	98	0·086	133	0·117	159	0·139
Mahasu	5,177	153	0·029	203	0·039	256	0·049	304	0·059
Bilaspur	451	69	0·153	87	0·193	110	0·244	132	0·293
Mandi	1,620	74	0·046	97	0·060	113	0·070	137	0·085
Chamba	3,135	77	0·025	106	0·038	136	0·043	164	0·052
Himachal Pradesh	11,524	446	0·039	591	0·051	748	0·065	896	0·078

[a] Motorable roads include only Primary and Secondary roads.

TABLE 28

DISTRICTWISE AND YEARWISE ROAD MILEAGE[a] PER SQUARE MILE (1955–56 TO 1958–59)

District	Area in square miles	1955–56		1956–57		1957–58		1958–59	
		Road mileage	Road per square mile	Road mileage	Road per square mile	Road mileage	Road per square mile	Road mileage	Road per square mile
Sirmur	1,141	262	0·230	352	0·309	433	0·379	505	0·443
Mahasu	5,177	431	0·083	565	0·109	675	0·130	785	0·152
Bilaspur	451	246·5	0·546	319·5	0·708	374·5	0·830	433·5	0·961
Mandi	1,620	358	0·221	443	0·273	499	0·308	563	0·347
Chamba	3,135	313·5	0·100	422·5	0·135	500·5	0·160	578·5	0·184
Himachal Pradesh	11,524	1,611	0·140	2,102	0·182	2,482	0·215	2,865	0·249

[a] Includes all types of roads, i.e., Primary, Secondary, Tertiary and Quarternary except the forest roads.

TABLE 29

ROAD MILEAGE[a] IN EACH DISTRICT SINCE 1955-56

Districts	Road mileage				Index (1955-56 = 100)		
	1955–56	1956–57	1957–58	1958–59	1956–57	1957–58	1958–59
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sirmur	262	352	433	505	134·3	165·3	192·7
Mahasu	431	565	675	785	131·1	156·6	182·1
Bilaspur	246·5	319·5	374·5	433·5	129·6	151·9	175·9
Mandi	358	443	499	563	123·7	139·4	157·3
Chamba	313·5	422·5	500·5	578·5	134·8	159·6	184·5
Himachal Pradesh	1,611	2,102	2,482	2,865	130·5	154·1	177·8

[a] Includes all types of roads, i.e., Primary, Secondary, Tertiary and Quarternary except the forest roads.

TABLE 30

MOTORABLE[a] ROADS IN EACH DISTRICT (1955–56 TO 1958–59)

District	Road Mileage				Index (1955–56 = 100)		
	1955–56	1956–57	1957–58	1958–59	1956–57	1957–58	1958–59
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sirmur	73	98	133	159	134·2	182·2	217·8
Mahasu	153	203	256	304	132·7	167·3	190·7
Bilaspur	69	87	110	132	126·1	169·4	191·3
Mandi	74	79	113	137	131·1	152·7	185·1
Chamba	77	106	136	164	137·7	176·6	213·0
Himachal Pradesh	446	591	748	896	132·5	167·7	200·9

[a] Motorable roads include only Primary and Secondary roads.

TABLE 31

DISTRICTWISE RELATIONSHIP BETWEEN STATE INCOME AND ROAD MILEAGE (1955–56)

District	*Total district income* (Rs. lakhs)	*Road mileage*	*Road mileage to 100 lakh net domestic output* $\frac{(3)}{(2)} \times 100$
(1)	(2)	(3)	(4)
Mahasu	617	431	69·85
Sirmur	348	262	75·29
Mandi	595	358	60·17
Bilaspur	211	246·5	116·82
Chamba	230	313·5	136·30
Himachal Pradesh	2,001	1,611	80·51

TABLE 32

DISTRICTWISE RELATIONSHIP BETWEEN AGRICULTURAL PRODUCTION AND ROAD MILEAGE (1957–58)

District	*Agricultural production* (Tons)	*Road mileage*	*Road mileage to 100 tons of agricultural production* $\frac{(3)}{(2)} \times 100$
(1)	(2)	(3)	(4)
Mahasu	89,529	675·0	0·754
Sirmur	54,003	433·0	0·802
Mandi	85,851	499·0	0·581
Bilaspur	26,724	374·5	1·401
Chamba	23,960	500·5	2·089
Himachal Pradesh	2,80,067	2,482	0·886

TABLE 33

REPLACEMENT OF VEHICLES

	Mileage covered	*Mileage for replacement*	*Vehicles replaceable*	*Vehicles replaced*	*Vehicles expected to be replaced*	*Short-fall*
First Plan Period	11,076,778	@100,000 (P 1949–50)	111			
	2,383,557	@116,000 (P & D mixed 1955–56)	21	79		53
Second Plan Period[a]	14,223,190	@116,000 (P & D mixed 1956–59 and anticipated for 1959–61)	122	22	53	47
			254	101	53	100

[a]Anticipated.

P = Petrol driven.

D = Diesel driven.

SOURCE: Himachal Administration.

TABLE 34

SUGGESTED FOREST-BASED INDUSTRIES

Type of Industries for Himachal Pradesh and Punjab	*Investment proposed* (Rs.)	*Capacity*
Period I—1961–66		
1. Tooth-picks, ice-cream spoons, spatulas, etc.	10,000 to 50,000	Not estimated
2. Packing material for fruits	30,000	,,
3. Wood turnery goods such as bobbins, etc.	1,000 to 15,000	,,
4. Pencil slates and pencils	2,79,000	,,
5. Furniture	3,00,000	,,
Period II—1966–71		
6. Manufacture of standardized types of doors and windows	5,000 to 10,000	1,000 to 3,000 windows a day
7. Re-manufacturing plant for sawn timber	10,000 to 50,000	Not estimated
8. Particle boards	13,00,000	5,000 tons a year
9. Platen press type particle board	13,30,000	4,500 to 5,000 tons a year
10. Plant for composite wood	8,00,000	3,000 to 5,000 tons a year
11. Plant for production of adhesives and binders	Not estimated	
12. Plant for rosin production	1,00,000	1,000 tons a year
Period III—1971–76		
13. Mechanical pulp mill	20,00,000	6,000 tons a year
14. Hard board plant	12,30,000	7,200 ,,
15. Semi chemical pulp	3,00,00,000	18,000 ,,
16. Integrated paper mill including newsprint	6,00,00,000	30,000 ,,
17. Formaldehyde from methanol	10,00,000	1,000 to 3,000 tons a year

TABLE 35

SUGGESTED METALLURGICAL AND METAL-BASED INDUSTRIES

Type of Industry	*Investment proposed by 1971* (Rs. lakhs)	*Location*	*Capacity by 1971*	*Period proposed for installation*
1. Manufacture of malleable and special alloy iron castings	150	Jogindernagar	5,000 tons for malleable and special alloy iron castings	Approximately ten years
2. Manufacture of electrical measuring instruments[a]	150	Solan	Rs. 1 crore worth	..
3. Nahan Foundry and its possible development for machine-building industry	30	Nahan	10,000 tons additional output	..
4. Development of iron ore mining	11	Mandi	60,000 tons	..
5. Development of limestone quarries	0·8	Mandi	15,000 tons	..
6. Production of pig iron including beneficiation	50	Jogindernagar	30,000 tons	..
7. Steel re-rolling mill	70	Jogindernagar	10,000 tons	..

[a] The capacity may be planned so as to achieve a production of about Rs. 1 crore worth of instruments by about 1970–71.

TABLE 36

SUGGESTED CHEMICAL AND ALLIED INDUSTRIES

	Type of Industries	*Investment*	*Location*	*Capacity*	*Period proposed for installation*
1.	Cement [a]	N.A.	Rajban-Paonta	Small-sized plant	N.A.
2.	Ceramics [b]	N.A.	Paonta	N.A.	N.A.
3.	Soda ash	Rs. 3.5 crores approx.	Jogindernagar	66,000 tons per year	..
4.	Fruit and vegetable preservation [c]	N.A.	Plant under completion at Jogindernagar	N.A.	..
5.	Alcoholic beverages [d]	..	..	..	..

[a] Large sized plant is not recommended. It requires detailed investigation as small size cement plant might not be very attractive.

[b] The training centre at Paonta run by the Administration can expand its operation to produce the State's demand for low tension insulators.

[c] Should adequate fruit resources be available after meeting the requirement of this plant and demand for fresh fruits, a second plant might be set up. This requires detailed investigation.

[d] The initiation of a brewery industry on the model of European and American brewery industries may be considered.

TABLE 37

SUGGESTED SMALL SCALE INDUSTRIES (1961–71)

Type of Industry	*Investment* (Rs. lakhs)	*Location*	*Capacity*	*Period proposed for installation*
(1)	(2)	(3)	(4)	(5)
1. Vegetable Tannery and leather working plant (3)	3·60 0·60 for expansion	1. Sundernagar 2. Chamba 3. Paonta	600 footwear and 300 leather suit cases/month or fraction thereof	1961–71
2. Chrome tannery (3)	6·75	1. Sundernagar 2. Chamba 3. Paonta	78,000 sq. ft. of tanned leather per month	—do—
3. Sheet metal products (5) (buckets, trunks, domestic utensils, cutlery)	6·00 2·50 for expansion	1. Solan 2. Mandi 3. Bilaspur 4. Chamba 5. Nahan	Approx. Rs. 1·25 lakhs worth of products per month in Phase I.	—do—
4. Repair and spare parts machine shop (5)	2·5	1. Solan 2. Mandi 3. Bilaspur 4. Chamba 5. Nahan	Rs. 300 lakhs worth of products and service income in a year	—do—
5. Stationery items (wooden items like rulers, penholders, etc.)	1·2	1. Solan 2. Mandi	Rs. 2 lakhs worth of stationery products in a year	—do—
6. Wood working units (3)	0·9	1. Solan 2. Mandi 3. Bilaspur	Not estimated	—do—
7. Dhup processing plants	0·60	1. Chamba 2. Rampur	Not estimated	—do—
8. Bamboo Mills (Bamboo curtains, chicks, toys, etc.)	1·80 (Japanese machine)	1. Bilaspur 2. Solan	Rs. 3·2 lakhs worth of products a year	—do—
9. Apple and fruit products	3·0	Solan	Rs. 5 lakhs worth of apple products a year	—do—

(contd.)

TABLE 37—*Contd.*

SUGGESTED SMALL SCALE INDUSTRIES (1961–71)

Type of Industry	*Investment* (Rs. lakhs)	*Location*	*Capacity*	*Period proposed for installation*
(1)	(2)	(3)	(4)	(5)
10. Ginger (Crystallized powder)	0·5	Solan	Not estimated	
11. Fireworks	2·0	Nahan	Rs. 5 lakhs value of fireworks a year	1961–71
12. Miscellaneous products (a) Tyre retreading	0·12	1. Mandi 2. Solan 3. Bilaspur	Service	—do—
(b) Assembling of umbrellas	0·5	Bilaspur	Not estimated	
(c) Handicrafts and embroidery central workshops	1·0	Chamba	Rs. 3·8 lakhs worth of products	—do—

TABLE 38

EXISTING SMALL AND MEDIUM INDUSTRIES

District	*Type of industries*	*Location*	*Distance from the road*
		Existing plants	
Mandi	1. Gun manufacture	Mandi	On the road
	2. Ayurvedic pharmacy	Jogindernagar	—do—
	3. Tea processing plant	—do—	—do—
		New plants to be set up	
	1. Tannery and leather works	Sundarnagar	On the road
	2. Sheet metal (domestic utensils, buckets, cutlery, etc.)	Mandi	—do—
	3. Service, repair and spare parts machine shop	—do—	—do—
	4. Foundry	—do—	—do—
	5. School requisites (foot-rules, pen-holders, toys, etc.)	—do—	—do—
	6. Looms, beehives, handles, sewing machines, packing cases, etc.	—do—	—do—
	7. Tyre retreading	—do—	—do—
		Existing plants	
Mahasu	1. Brewery and distillery	Solan	On the road and railways
	2. Cereal Product	—do—	On the road
	3. Hosiery	—do—	—do—
	4. Drugs	—do—	—do—
	5. Rosin and turpentine	Suni	—do—
		New plants to be set up	
	1. Sheet metal (domestic utensils, buckets, cutlery, etc.)	Solan	On the road
	2. Wool spinning	— [a]	—do—
	3. Weaving mill	— [a]	—do—
	4. School requisites (foot-rules, pen-holders, toys, etc.)	Solan	—do—
	5. Dhup processing plant	—do—	—do—
	6. —do—	Rampur	—do—
	7. Bamboo mills	Solan	—do—
	8. Fruit canning	—do—	—do—
	9. Ginger (crystallized and powdered)	—do—	—do—
	10. Fireworks	Nahan	—do—
	11. Service, repair and spare parts	—do—	—do—
	12. —do—	Solan	—do—

[a] The Administration may decide a suitable place.

(*contd.*)

TABLE 38—*Contd.*

District	*Type of industries*	*Location*	*Distance from the road*
		Existing plants	
Sirmur	1. Foundry	Nahan	On the road
	2. Rosin and turpentine	—do—	—do—
	3. Sugar factory	Paonta	—do—
	4. Domestic utensils	—do—	—do—
	5. Bicycle industry	Nahan	—do—
	6. Gun powder	—do—	—do—
	7. Kalai making	—do—	—do—
	8. Ayurvedic pharmacy	Majra	—do—
	9. Trunks, buckets, etc.	Nahan	—do—
		New plants to be set up	
	1. Tannery and leather works	Paonta	On the road
	2. Sheet metal (domestic utensils, buckets, cutlery, etc.)	Nahan	—do—
		Existing plants	
Chamba	1. Shawls	Chamba	On the road
	2. Wool work	—do—	—do—
Bilaspur	1. Assembling of sewing machines	Bilaspur	—do—
		New plants to be set up	
Chamba	1. Tannery and leather works	Chamba	On the road
	2. Sheet metal (domestic utensils, buckets, cutlery, etc.)	—do—	—do—
	3. Service, repair and spare parts machine shop	—do—	—do—
	4. Wool spinning	—do—	—do—
	5. Weaving mill	—do—	—do—
	6. Dhup-processing plant	—do—	—do—
	7. Looms, beehives, handles, sewing machine bottoms, packing cases, etc.	—do—	—do—
Bilaspur	1. Sheet metal (domestic utensils, buckets, cutlery, etc.)	Bilaspur	On the road
	2. Service, repair and spare parts machine shop	—do—	—do—
	3. Bamboo mill		
	4. Foundry	—do—	—do—
	5. Umbrella ribs	—do—	—do—

TABLE 39

RATE OF GROWTH OF POPULATION

Period	*Decennial increase*	
	Himachal Pradesh	*All-India*
1901–11	+ 3·8%	+ 5·7%
1911–21	+ 1·5%	..
1921–31	+ 7·2%	+ 11·0%
1931–41	+ 10·8%	+ 14·3%
1941–51	+ 4·9%	+ 13·3%

SOURCE: *Census*, 1951.

TABLE 40

STRUCTURE OF WORKING FORCE [a]

State/ Territory	*Proportion of working force to total population*	*Number of women workers to every 100 males*
Himachal Pradesh	59·5	69
Madhya Pradesh	50·1	63
Rajasthan	50·4	59
Bombay	43·1	51
Uttar Pradesh	2·0	37
Punjab	39·3	28
Madras	30·0	29
All-India	40·0	54

[a] Persons taking part in economic activities including self-supporting persons and earning dependents.

TABLE 41

DISTRIBUTION OF TRIBAL POPULATION

Name of the Tribe	*Approximate number*
1. Gaddi	36,437
2. Gujjar	8,000
3. Kinners	40,159
4. Lahaula	3,000
5. Pangwalla	7,137
TOTAL	94,733

SOURCE: Directorate of Social Welfare, Himachal Pradesh.

TABLE 42

DISTRICTWISE POPULATION OF SCHEDULED TRIBES

District	*Population of Scheduled Tribes*
1. Mahasu	35,559
2. Mandi	2,801
3. Chamba	36,437
4. Sirmur	1,652
5. Bilaspur	3,934
TOTAL	80,383

SOURCE: Directorate of Social Welfare, Himachal Pradesh.

TABLE 43

PATTERN OF FIVE YEAR PLANS OUTLAY ALLOCATIONS

(Rs. lakhs)

		1956–61	*1961–66*	*1966–71*
I.	*Agriculture and Irrigation*	*163*	*390*	*560*
	A. Agricultural production	71	150	210
	B. Minor irrigation	48	100	100
	C. Animal husbandry	33	100	150
	D. Misc. (Cons. Hold)	11	40	100
II.	*Forests*	*55*	*300*	*500*
III.	*Fisheries*	*2*	*25*	*65*
IV.	*Power*	*214*	*300*	*400*
V.	*Transport*	*459*	*750*	*1,000*
VI.	*Industries*	*48*	*500*	*800*
	A. Large and medium	..	400	600
	B. Small and cottage	48	100	200
VII.	*Instruments of Growth*	*477*	*900*	*1,410*
	A. Cooperation	48	75	100
	B. Panchayats, etc.[a]	27	50	85
	C. N.E.S. and C.D.	119	175	225
	D. Education	114	300	500
	E. Health	169	300	500
VIII.	*Social Services*	*58*	*150*	*300*
	A. Labour welfare	4	10	25
	B. Social welfare	5	20	40
	C. Housing	8	20	35
	D. Welfare of backward classes	41	100	200
IX.	*Miscellaneous*			
	A. Plan publicity	11	30	45
	B. Statistics	5	10	25
	C. Local bodies	11	25	50
	GRAND TOTAL	1,473[b]	3,380	5,155

[a] SOURCE: Himachal Pradesh Second Five Year Plan.

[b] Inclusive of panchayats, the Second Plan outlay would be Rs. 1,503 lakhs.

Appendices

Appendix 1

Composition of the Survey Team

DIRECTOR-GENERAL

Dr. P. S. Lokanathan

PROJECT DIRECTORS

Dr. M. H. Gopal Dr. B. Natarajan

Dr. Ashok Singh	*Minerals*
Mr. S. Balakrishna	*Metallurgical Engineering*
Mr. M. K. Chatterjee	*Power*
Dr. R. J. Chelliah	*State Finances*
Dr. B. N. Chopra	*Fisheries*
Mr. Frank M. Hruz	*Minerals*
Mr. V. Kannan	*Chemical Engineering*
Mr. V. S. Krishnaswamy	*Forests Development*
Dr. J. E. Marian	*Forests Utilization*
Mr. G. Menon	*Small Industries*
Mr. A. S. Mirchandani	*Small Industries*
Dr. N. V. A. Narasimham	*State Income*
Mr. L. A. Natesan	*Transport*
Mr. P. R. Rao	*Agriculture*
Mr. S. D. Thapar	*Manpower, Tribals and Tourism (Project Officer)*

Appendix 2

State Income

1. Himachal Pradesh is one of the poorest and backward Territories in the Indian Union. With an area of 11,524 square miles and a population of 1·143 million, it is one of the least densely populated as compared to other States in India and is also one with a very low net output per head of the population. Its estimated per capita net output in the year 1955–56 is Rs. 175 which is far below the all-India per capita income of Rs. 261 or in comparison with adjoining Punjab which has for the same year Rs. 295 as per capita income. Even in this backward Territory there are marked intra-regional disparities. The net output per capita is the highest (Rs. 204) in Sirmur district which is in the plains and lowest (Rs. 127) in the northernmost hilly and isolated Chamba district. The other districts come in between the two extremes — Mandi with Rs. 185, Mahasu with Rs. 181 and Bilaspur with Rs. 162. The per capita income of the districts of Sirmur, Mandi and Mahasu are above the average for the Territory and those of Bilaspur and Chamba are below the average.

Activitywise Distribution

2. The net domestic output of Himachal Pradesh is estimated at Rs. 2,001·38 lakhs for 1955–56. The breakdown of the share of primary sector is as below :

	(Rs. lakhs)
Agriculture	819·49
Forestry	123·97
Animal Husbandry	446·15
Fisheries	2·76
Mining	2·87
TOTAL PRIMARY SECTOR	1,395·24

The income from this sector accounts for 69·7 per cent of the total net output whereas in Punjab and for all-India the share of this sector is 47 per cent and 46 per cent respectively.

3. Secondary activities contributed only Rs. 227·6 lakhs of which Rs. 209·1 lakhs was from small enterprises and only Rs. 18·44 lakhs was from the organized sector.

4. The tertiary activities generate Rs. 378·66 lakhs of which transport and communication provide Rs. 183·17 lakhs and other services Rs. 195·2 lakhs. The low contribution from transport is traceable to the poor transport and communication in this hilly Territory.

Districtwise Distribution

5. Regionwise too there are marked differences among the five districts.

District	*Net output* (Rs. lakhs)
Mahasu	617·17
Mandi	594·74
Sirmur	348·47
Chamba	230·27
Bilaspur	210·78

Mahasu and Mandi by themselves contribute 60 per cent of the Territory's net output. These two districts contribute 62 per cent of the output from agriculture and 56 per cent from animal husbandry. As regards forestry, Mahasu by itself accounts for 62 per cent. Mandi appears to be the major district with mineral activities. It contributes almost all the net output of the Territory — Rs. 290,000. Thus as regards primary activities, Mahasu and Mandi are the important districts from the standpoint of their contribution to the total net output.

6. Regarding secondary activities, Mahasu stands out contributing Rs. 10·8 lakhs out of Rs. 18·5 lakhs attributable to factory enterprises. There is, however, no concentration of the net output from small industries though Mandi is the largest contributor with Rs. 66·3 lakhs to the total net output of Rs. 209·1 lakhs of the entire Territory. Next in order come the districts of Mahasu (Rs. 48·1 lakhs), Sirmur (Rs. 46·2 lakhs) and Bilaspur (Rs. 38·3 lakhs). Chamba's share is very low being Rs. 10·2 lakhs or five per cent of the total.

7. As regards commerce, Mandi contributes nearly one-third of Territory's total of Rs. 146·0 lakhs. Next in order of magnitude come Mahasu Rs. 31·6 lakhs, Sirmur Rs. 27·5 lakhs, Chamba Rs. 21·5 lakhs and Bilaspur Rs. 14·5 lakhs. In transport again, Mahasu's share is the largest — Rs. 14·4 lakhs, perhaps due to its relatively larger area. With regard to personal and other services, Mandi and Mahasu rank first and second in total contribution to the Territory from this source.

8. To judge the economic importance of each district in the Territory, the net output per head of population in each district is the most suitable criterion. The highest per capita output, Rs. 204, is in Sirmur district. Next come in order Mandi with Rs. 185, Mahasu Rs. 181, Bilaspur Rs. 162 and Chamba Rs. 127. Bilaspur with the biggest population density of 288 persons has only output of Rs. 162 per head.

9. The net domestic product of Mahasu district for the year 1955–56 is Rs. 617·3 lakhs. Out of this 74·7 per cent is produced by primary activities; 9·5 per cent by secondary activities and 15·8 per cent by tertiary activities. Out of Rs. 460·8 lakhs from primary activities, Rs. 260·7 lakhs is from agriculture; Rs. 122·1 lakhs from animal husbandry; Rs. 77·6 lakhs from forestry; Rs. 40,000 from fisheries. Out of Rs. 58·9 lakhs from secondary activities, Rs. 48·1 lakhs comes from small scale enterprises. In the tertiary sector, the most dominant group is from services such as administration, domestic services and liberal arts.

Mandi

10. The net domestic product of Mandi district is valued at Rs. 594.7 lakhs. Out of this 67 per cent comes from primary activities; 11·5 per cent from secondary activities and 21·5 per cent from tertiary activities. Out of Rs. 398·2 lakhs from primary output, Rs. 248·8 lakhs comes from agriculture; Rs. 127·6 lakhs from animal husbandry, Rs. 18·0 lakhs from forestry; Rs. 86,000 from fisheries and Rs. 29,000 from mining. Out of Rs. 68·3 lakhs from secondary activities, Rs. 66·3 lakhs comes from small enterprises and Rs. 2·00 lakhs from factory enterprises. In the tertiary sector the most dominant group is services.

11. Out of the net output of Rs. 230·4 lakhs in Chamba district Rs. 74·4 lakhs is derived from primary activities; 4·3 per cent from secondary ones and 19·2 per cent from tertiary activities. Out of Rs. 174·4 lakhs from primary output, Rs. 74·4 lakhs come from agriculture; Rs. 88·8 lakhs from animal husbandry; Rs. 11·4 lakhs from forestry and Rs. 30,000 from fisheries. Out of Rs. 11·2 lakhs from secondary activities, Rs. 10·2 lakhs come from small enterprises and Rs. 100,000 from factory enterprises. The most important facet of tertiary income is from commerce.

Sirmur

12. The net domestic product of Sirmur district is Rs. 348·5 lakhs of which 64·8 per cent is from primary activities; Rs. 14·5 per cent from secondary sources and Rs. 72·4 lakhs (20·7 per cent) from tertiary activities. Out of Rs. 225·2 lakhs from primary output; Rs. 147·2 lakhs come from agriculture, Rs. 64·6 lakhs from animal husbandry, Rs. 12·8 lakhs from forestry and Rs. 60,000 from fisheries. Out of Rs. 50·9 lakhs from secondary activities Rs. 46·2 lakhs come from small enterprises and Rs. 470,000 from factory enterprises. In the tertiary incomes, the most dominant tertiary income is from services such as administrative, liberal arts and domestic services etc.

Bilaspur

13. The net domestic product of Bilaspur district is Rs. 210·8 lakhs. Out of this, Rs. 136·2 lakhs (64·6 per cent) is produced by primary activities; Rs. 38·3 lakhs (18·2 per cent) by secondary activities, and Rs. 36·2 lakhs (17·2 per cent) from tertiary activities. Out of Rs. 136·3 lakhs from primary activities, Rs. 88·4 lakhs come from agriculture; Rs. 43·1 lakhs from animal husbandry; Rs. 420,000 from forestry; and Rs. 60,000 from fisheries. Small enterprises contribute the entire Rs. 38·3 lakhs from secondary activities. In tertiary incomes, the most dominant tertiary income is from services such as administration, liberal arts and domestic services.

14. The varying components of the net output emphasize how the economic structure differs from district to district. In Mahasu 75 per cent of the per capita net output is derived from primary sector, 9 per cent from secondary and 16 per cent from tertiary sectors. Comparable figures for Mandi are 67 per cent primary, 11 per cent secondary and 22 per cent tertiary, for Chamba 76 per cent primary, five per cent secondary, 19 per cent tertiary; for Sirmur 64 per cent primary, 15 per cent secondary, and 21 per cent tertiary and for Bilaspur 65 per cent primary, 18 per cent secondary and 17 per cent tertiary.

15. Sirmur district produces the highest per capita net output among the five districts and is able to do so probably due to the relatively more balanced economic structure.

TABLE I

ACTIVITYWISE ESTIMATE OF STATE INCOME (1955-56)

	Income (Rs. lakhs)	*Percentage distribution*
A. Primary Incomes		
1. Agriculture	819·49	40·9
2. Forestry	123·97	6·2
3. Animal Husbandry	446·15	22·3
4. Fisheries	2·76	0·1
5. Mining	2·87	0·2
TOTAL	1,395·24	69·7
B. Secondary Incomes		
1. Factory Enterprises	18·44	0·9
2. Small Enterprises	209·04	10·4
TOTAL	227·48	11·3
C. Tertiary Incomes		
(*i*) *Transport, etc.*		
1. Railways	...	...
2. Transport	37·49	1·9
3. Communications, 4. Organized Banking, 5. Other Commerce	145·68	7·3
(*ii*) *Other services*		
1. Government Services, 2. Professional Liberal Art, 3. Domestic Services, 4. House Property	195·49	9·8
TOTAL	378·66	19·0
GRAND TOTAL	2,001·38	100·0

TABLE II

DISTRICTWISE AREA, POPULATION, DENSITY AND PER CAPITA INCOME (1955-56)

District	*Area* (square miles)	*Estimated population* (thousands)	*Density*	*Primary Income* (Rs. lakhs)	*Secondary Income* (Rs. lakhs)	*Tertiary Income* (Rs. lakhs)	*Per capita Primary Income* (Rs.)	*Per capita Secondary Income* (Rs.)	*Per capita Tertiary Income* (Rs.)	*Total per capita Income* (Rs.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Mahasu	5,177	341	66	460·76	58·86	97·55	135	17	29	181
Mandi	1,620	320	197	398·20	68·32	128·22	124	21	40	185
Chamba	3,135	181	58	174·80	11·16	44·31	97	6	24	127
Sirmur	1,141	171	150	225·23	50·89	72·35	132	30	42	204
Bilaspur	451	130	288	136·25	38·25	36·23	105	29	28	162
Total	11,524	1,143	99	1,395·24	227·48	378·66	122	20	33	175

TABLE III

DISTRICTWISE ESTIMATES OF NET DOMESTIC OUTPUT (1955-56)

(In Rs. lakhs)

District	*Total net domestic output*	*Agriculture*	*Forestry*	*Fisheries*	*Animal husbandry*	*Mining*	*Factory enterprises*	*Small enterprises*	*Commerce*	*Transport*	*Other services*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mahasu	617·17	260·66	77·60	0·38	122·12	—	10·76	48·10	31·35	14·28	51·52
Mandi	594·74	248·83	18·04	0·86	127·60	2·87	2·00	66·32	50·87	13·62	63·73
Chamba	230·27	74·39	11·38	0·28	88·75	—	0·95	10·21	21·52	3·14	19·65
Sirmur	348·47	147·23	12·82	0·62	64·56	—	4·73	46·16	27·48	5·02	39·85
Bilaspur	210·73	88·38	4·13	0·62	43·12	—	—	38·25	14·46	1·43	20·34
Total	2001·38	819·49	123·97	2·76	446·15	2·87	18·44	209·04	145·68	37·49	195·49

TABLE IV

ACTIVITYWISE DISTRIBUTION OF STATE INCOMES
(1955-56)

(In Rs. crores)

State/Territory	*Primary*	*Secondary*	*Tertiary*	*Total*
Punjab	236·90	57·26	211·40	505·56
	(46·9%)	(11·3%)	(41·8%)	(100%)
Andhra	384·36	99·31	284·15	767·82
	(50·0%)	(13·0%)	(37%)	(100%)
Madras	316·86	123·00	292·50	732·30
	(43·3%)	(16·8%)	(39·9%)	(100%)
Himachal Pradesh	13·95	2·27	3·79	20·01
	(69·7%)	(11·3%)	(19%)	(100%)
All-India	4,630·00	1,750·00	3,610·00	9,990·00
	(46·4%)	(17·58%)	(36·12%)	(100%)

Appendix 3

Pattern of Revenue and Expenditure

1. Prior to Himachal Pradesh becoming a Union Territory, it had a separate budget like any other State, in the Union. With effect from the beginning of November 1956, however, the finances of the Territory were merged with the finances of the Central Government. Whatever taxes are collected in the Territory are paid into the Consolidation Fund of India, and, correspondingly, all expenditure is met out of the same fund. There is, therefore, no question of separately balancing the budget for Himachal Pradesh. In this sense, expenditures incurred by Himachal Pradesh administration are completely unrelated to the revenues raised from within the Territory. Nevertheless, it is important to know what the local sources of revenue are so that the possibility and desirability of raising further resources for development from the local population may be considered. Similarly, it may be useful to enquire into the present pattern of expenditure in Himachal Pradesh in order to see that the funds made available are utilized to the fullest advantage.

2. Revenue receipts and revenue expenditure of Himachal Pradesh Administration in the years 1948–49 to 1958–59 are given in tables that follow. These tables enable us to see the trends in revenue and expenditure since 1948–49.

Trends in Revenue

3. Total revenue has increased from Rs. 144·23 lakhs in 1948–49 to Rs. 263·18 lakhs in 1958–59 (Budget Estimate). This represents an increase of 82·6 per cent over a decade. It must be noted however, that in 1949–50 revenue had already reached the figure of Rs. 204·2 lakhs so that the percentage increase between 1949–50 and 1958–59 is only about 29. Actually, there were wide fluctuations in revenue in the years between 1948 and 1953. Only since the later year there has been a more or less steady increase in revenues. It must be noted that the revenue figures given here do not include Union grants and, therefore, represent resources raised by Himachal Pradesh on its own.

4. Tax revenue has been more or less stagnant during this period, the figure for 1958–59 being slightly lower (by Rs. 1·2 lakhs) than that for 1948–49. There was a downward trend since 1950 which continued up to 1954, when tax revenue fell to Rs. 39·87 lakhs. There was some recovery after the latter year, but as pointed out above, even by 1958–59 the level of a decade ago had not been reached. These figures definitely show that the burden of 'State' taxation in Himachal Pradesh has actually fallen since independence.

5. The relative changes in the major components of revenue between 1948–49 and 1958–59 are brought out in Table I.

6. The share of tax revenue has fallen from 31·97 per cent in 1948–49 to as low as 17·06 per cent in 1958–59; by contrast, the share of Forest and Public Enterprises has risen. As there has been a slight fall in tax revenues and in administrative receipts, the rise in total revenue is solely

TABLE I

RELATIVE CHANGES IN THE MAJOR COMPONENTS OF REVENUE BETWEEN 1948–49 AND 1958–59

(In Rs. lakhs)

Nature of source	*1948–49 Accounts*	*Percentage of total*	*1958–59*	*Percentage of total*	*Percentage increase between 1948–58*
(1)	(2)	(3)	(4)	(5)	(6)
1. Tax Revenue	46·1	31·97	44·9	17·06	— 2·6
2. Receipt from Commercial Undertakings	..	..	45·8	17·4	..
3. Forests	62·1	44·06	133·9	50·89	115·6
4. Civil Administration	36·0	24·97	27·6	10·5	—23·3
5. Other Revenue	..	..	1·10	4·2	..

due to the increase in revenue from public enterprises; and they bring in about 68 per cent of the total. It is noteworthy that forests alone account for 50 per cent of total revenue.[1]

Trends in Expenditure

7. Total expenditure on Revenue Account has increased from Rs. 114·1 lakhs in 1948–49 to Rs. 540·6 lakhs in 1958–59 — an increase of 373 per cent in 10 years. Unlike revenue, expenditure has increased more or less steadily since 1948. Since the time the area became a Union Territory, the increase has naturally been quite marked. Over the decade, development expenditure has increased much faster than non-development expenditure. Thus the share of development expenditure rose from 56·2 per cent in 1948–49 to 68·6 per cent in 1958–59. Though this is a very desirable feature in the trends in expenditure, it must be noted that expenditure on security services has increased three times during the decade. There may have been special factors causing such a rapid rise in administrative expenditure, but it is clear that, as in the rest of India, so also in Himachal Pradesh the greatest possible restraint must be placed on the growth of administrative expenditure.

Changes in Pattern of Expenditure

8. The changes in the pattern of expenditure between 1948–49 and 1958–59 are brought out in Table II. As indicated here, the share of development expenditure has increased from 56·2 per cent to 68·6 per cent of the total. Among the developmental items the shares of Forests, Industries, and Education have fallen, while those of Agriculture, Health and Civil Works have risen. In absolute terms, expenditure on each of the developmental items has risen considerably during the decade. To give only two examples: expenditure on education has increased by about four times and that on health by about seven times.

[1] This refers to gross revenue from Forests.

TABLE II

PATTERN OF EXPENDITURE ON REVENUE ACCOUNT, 1948–49 AND 1958–59

	1948–49		*1958–59 (B.E.)*	
	Expenditure (Rs. lakhs)	*Percentage of total*	*Expenditure* (Rs. lakhs)	*Percentage of total*
Forests	24·73	21·7	46·02	8·5
Agriculture	1·31	1·1	23·31	4·3
Veterinary	0·37	0·3	14·35	2·7
Cooperation	0·48	0·4	5·61	1·0
Industries	7·32	6·4	22·88	4·2
Civil Works	13·32	11·7	76·44	14·1
Road Transport	Nil	..	52·55	9·7
Others	·01	..	52·22	9·7
Education	9·16	8·0	35·63	6·6
Health	5·30	4·6	38·53	7·1
Miscellaneous Development	2·23	2·0	3·52	0·7
Total Development	64·23	56·2	371·06	68·6
Security Services	31·23	27·4	96·58	17·9
Miscellaneous Non-Development	18·70	16·4	73·04	13·5
Total Non-Development	49·93	43·8	169·62	31·4
GRAND TOTAL	114·16	100·0	540·68	100·0

9. In 1958–59, the most important heads of expenditure were Security Services, Civil Works, Forests, Health and Education. The share of health is 7·1 per cent and that of education 6·6 per cent. As percentage of total expenditure (that is Revenue and Capital) the shares would be still lower. A higher priority for these fields seems called for in view of the backwardness of the region in respect of educational and health facilities.

10. Expenditure on Security Services (administrative expenditure) forms only 17·9 per cent of total revenue expenditure and its relative share has fallen over the decade. However, it must be noted that in absolute terms administrative expenditure has risen by three times in 10 years.

TABLE

REVENUE RECEIPTS IN

Heads	*1948–49*	*1949–50*	*1950–51*	*1951–52*
(1)	(2)	(3)	(4)	(5)
Tax Revenue				
1. Land Revenue	20·69	19·92	20·54	20·99
2. Stamps	2·11	3·24	3·13	3·54
3. Registration	0·11	0·30	0·29	0·49
4. Excise Duty	13·19	15·96	18·21	19·40
5. Taxes on Vehicles	0·43	0·39	0·22	0·21
6. Other Taxes and Duties	9·56	9·92	1·11	1·77
TOTAL	46·09	49·73	43·50	46·40
Non-Tax Revenue				
1. Irrigation	..	..	..	..
2. Forests	62·16	59·01	70·02	57·10
3. Debt Service	..	..	..	(−)0·15
4. Civil Administration	35·98	95·51	82·55	18·51
5. Civil Works	..	..	..	0·60
6. Road Transport Schemes	..	..	..	21·39
7. Miscellaneous and Extraordinary Items	..	..	..	(−)8·04
TOTAL	98·14	154·52	152·57	89·71
TOTAL REVENUE	144·23	204·25	196·07	126·18

SOURCES: (1) *Himachal Budget in Brief (1956–57)*, Directorate of Economics and Statistics, Himachal Pradesh (Figures for 1948–49 to 1954–55).

(2) *Quarterly Bulletin of Statistics*, Directorate of Economics and Statistics, Himachal Pradesh Vol. III, No. 4, December 1958.

III

HIMACHAL PRADESH

(In Rs. lakhs)

1952–53	*1953–54*	*1954–55*	*1955–56*	*1956–57*	*1957–58*	*1958–59*
(6)	(7)	(8)	(9)	(10)	(11)	(12)
19·73	18·86	20·77	18·90	20·23	19·00	19·08
3·36	3·56	3·84	4·40	4·88	4·77	4·77
0·32	0·24	0·26	0·24	0·29	0·30	0·30
14·98	15·69	15·87	16·96	18·61	15·86	14·40
0·34	0·45	0·30	0·28	0·41	0·62	0·82
1·65	1·07	1·33	1·26	1·19	4·63	5·48
40·38	39·87	42·37	42·04	45·61	45·18	44·85
..	..	..	..	..	0·10	0·50
62·61	68·03	79·18	84·16	97·32	133·39	133·91
0·01	..	..	..	0·01	0·12	0·34
19·78	20·60	20·75	30·92	19·15	29·34	27·61
3·86	2·88	4·59	2·63	1·56	2·00	2·20
22·12	25·63	31·57	32·68	35·30	48·50	45·31
2·77	10·21	22·03	30·85	11·94	7·79	8·46
111·15	127·35	158·12	181·24	165·28	221·24	218·33
151·53	167·22	200·49	223·28	210·89	266·42	263·18

TABLE

REVENUE EXPENDITURE IN HIMACHAL PRADESH—

Heads	*1948–49*	*1949–50*	*1950–51*	*1951–52*
(1)	(2)	(3)	(4)	(5)
Development Services				
1. Forestry	24·73	26·51	25·51	24·17
2. Agriculture	1·31	1·98	1·87	2·29
3. Veterinary	0·37	0·74	0·87	0·97
4. Cooperation	0·48	0·75	0·99	1·36
5. Industries	7·32	16·45	9·70	14·81
6. Civil Works	13·32	8·40	64·52	28·21
7. Road Transport Schemes	..	..	..	20·50
8. Others	0·01	..	..	..
9. Education	9·16	12·96	17·34	18·89
10. Medical and Public Health	5·30	9·51	9·86	12·16
11. Other Departments	2·23	2·02	0·95	0·76
TOTAL	64·23	79·32	131·61	124·22
Non-Development Services				
1. Security Services	31·23	44·53	42·76	43·77
2. Miscellaneous	18·70	76·75	3·19	3·07
TOTAL	49·93	121·29	45·95	46·84
TOTAL EXPENDITURE	114·16	200·61	177·56	171·06

SOURCES: (1) *Himachal Budget in Brief (1956–57)*, Directorate of Economics and Statistics, Himachal Pradesh (Figures for 1948–49 to 1954–55).

(2) *Quarterly Bulletin of Statistics*, Directorate of Economics and Statistics, Himachal Pradesh Vol. III, No. 4, December 1958.

IV

DEVELOPMENT AND NON-DEVELOPMENT SERVICES

(In Rs. lakhs)

1952–53	*1953–54*	*1954–55*	*1955–56*	*1956–57*	*1957–58*	*1958–59*
(6)	(7)	(8)	(9)	(10)	(11)	(12)
25·50	27·11	30·56	35·54	37·79	46·30	46·02
2·56	5·13	11·72	15·78	13·20	21·13	23·31
1·08	1·29	1·66	4·99	6·41	10·41	14·35
2·19	5·52	8·92	9·11	5·97	9·80	5·61
30·00	27·44	14·77	15·32	11·82	30·10	22·88
46·59	49·15	43·14	89·23	..	59·84	76·44
25·65	21·78	30·57	30·06	42·37	54·42	52·55
2·31	9·88	9·18	39·74	41·16	61·22	52·22
24·08	30·80	38·54	44·69	51·60	40·26	35·63
19·26	21·00	21·42	34·84	37·95	39·88	38·53
0·73	0·71	0·82	0·93	1·14	2·39	3·52
179·95	199·81	211·30	320·23	249·41	375·75	371·06
50·89	58·32	64·86	78·99	80·15	94·62	96·58
7·10	9·36	16·56	29·05	18·36	31·85	73·04
57·99	67·68	81·42	108·04	98·51	126·47	169·62
237·94	267·49	292·97	428·27	347·92	502·22	540·68

Appendix 4

Sourcewise Distribution of Net Irrigated Area

(In acres)

Agricultural year	*Wells*	*Other Source*	*Total*
1951–52	23	118,189	118,212
1952–53	23	95,670	95,693
1953–54	25	92,479	92,504
1954–55	41	94,894	94,935
1955–56	62	94,908	94,970
1956–57	63	93,453	93,516
1957–58	63	93,316	93,379

SOURCE: *Quarterly Bulletin of Statistics*, December 1958, Himachal Pradesh.

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